American Artisan

THE WARM AIR HEATING AND SHEET METAL JOURNAL

FOUNDED 1880

Make 1930 Your Banner Year as 1929 was ours

The "BIG SUCCESS IDEA" is more than a Book of Money Making Ideas. It is a complete sales plan for increasing your business and profits—write for it today.

THE Success line of heaters is COMPLETE—a size and type for every heating purpose. Success Heaters ARE THE UTMOST in scientific design and construction with practical features that appeal. Ask for the Success catalog.

Get a

LARGER PROFIT

LAST year was our biggest and best year because it was the biggest and best year for Success dealers.

Success dealers not only sold more warm air heating installations but they got a *larger profit per sale.*

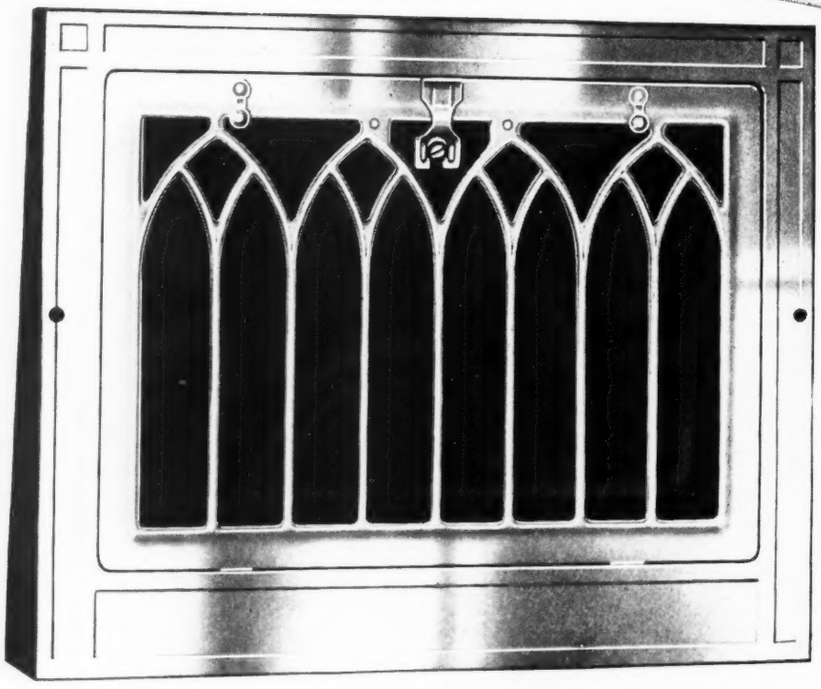
The "Big Success Idea" is only the name for the most practical, most complete and result-getting sales plan ever worked out for the warm air heating contractor.

The "Big Success Idea" will be even bigger and better this year—for a bigger, more successful year become a Success dealer *now.*

SUCCESS HEATER MFG. COMPANY
DES MOINES, IOWA

SUCCESS HEATERS

THE LINE OF NO REGRETS



No. 110 Series

Are You Ready to Supply Your Customers with This Beautiful New Register?

HOMEOWNERS, installers and dealers everywhere are applauding the beauty of this new Baseboard Register No. 110.

The distinction of its fine classic design will help close many furnace contracts this year. Your customers will call for this new register; are you ready to take care of them?

As in all H & C Registers, the formed fretwork assures ample strength and affords unsurpassed free face area.

Hart & Cooley have prepared a colorful folder which gives all the details concerning this new Register. The trade will be gladly supplied upon request.

H&C

HART & COOLEY REGISTERS

Made by HART & COOLEY MFG. CO.

CHICAGO
61 West Kinzie Street

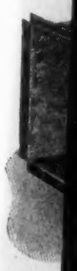
NEW BRITAIN, CONN.
Corbin Avenue

Philadelphia, 1600 Arch Street
New York, 101 Park Avenue

Boston, 75 Portland Street
Nashua, New Hampshire

ALSO: A COMPLETE LINE OF CAST AND WROUGHT GRILLES—New Catalog Ready

Factories, New Britain, Conn.; Holland, Mich.; Nashua, N. H.



TH
47
trol,
pan.
Ask
litera

THE NEW Automatic HESS

WELDED STEEL CONSTRUCTION

HERE is a furnace with grate surface of 338 sq. in. and for heat pipe area up to 590 sq. in., large enough for a large share of your furnace sales. It is automatic and comes complete with:

1. *Automatic humidifier—float valve type.*
2. *Automatic, electric, thermostatic control.*
3. *Electric booster blower, on stand, cord and socket.*

Furnished complete and standard with these features, it sells for little more than an ordinary furnace of the same capacity. Here is a furnace you can feature and which will sell to your customers on sight. We offer an exclusive dealer proposal outside of Chicago district or where we are not represented.

Hess Warming & Ventilating Co.
1207 South Western Ave. Chicago, Ill.

THE Hess Automatic Furnace Number 47A complete with thermostatic control, electric blower and automatic water pan. Sells complete for only $115.00. Ask for particulars and complete literature.

Hess Warming & Ventilating Company,
1207 South Western Ave., Chicago, Ill.

Please send me complete information on your dealer plan on the Hess Automatic Furnace.

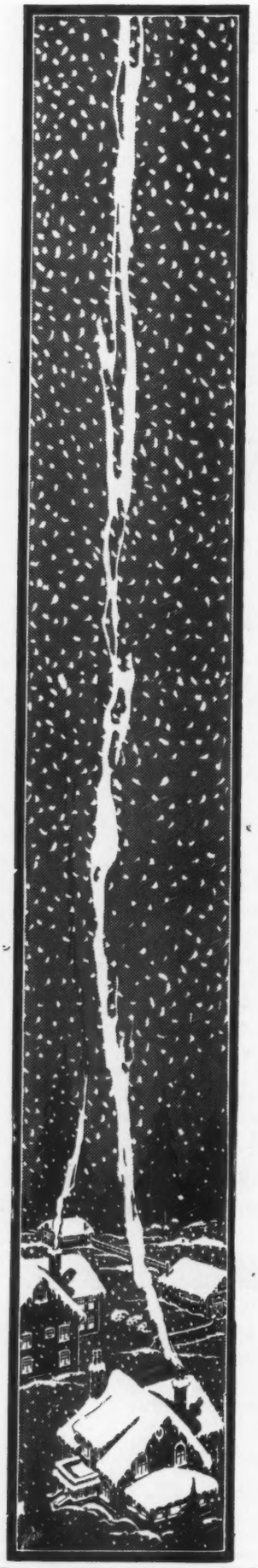
Name .....

Address .....

Town ..... *State* .....

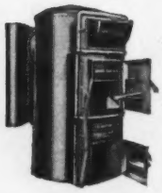
Published Every Other Week by Porter, Spofford, Langtry Corp., 139 North Clark Street, Chicago, Illinois. AMERICAN ARTISAN—the Warm Air Heating and Sheet Metal Journal—entered as second class matter, March 26, 1928, at the Post Office at Chicago, Illinois, under act of March 3, 1879. Formerly entered on June 25, 1887, at American Artisan and Hardware Record.

INDEX PAGES—16 and 52 **BUYERS' DIRECTORY—54 and 56**



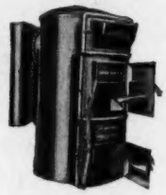
There's Honest Value In the WESTERN FURNACE

It has stood the test of the frozen North, 'mid swirling blizzards and below zero weather. No needless frills on the Western . . . every part has a definite purpose.



The Western Steel Furnace is built of the best steel that money can buy . . . KEYSTONE COPPER BEARING . . . It is made by skilled workmen in our modern factory. Designed by expert heating engineers . . . every feature tested and tried . . . it is a practical furnace for the practical job of heating.

Our jobbers listed below are ready to serve you in any part of the country. Let the nearest show you better furnace profits. Write to our factory for catalog and information.



WESTERN STEEL PRODUCTS CO.

130 Commonwealth Ave. - - Duluth, Minn.

Group One

Pittsburgh, Pa. — *Wagener-Proie Furnace Company*
Ravenna, Ohio — *Ravenna Furnace Company*
Cincinnati, Ohio—*Nishaus Furnace Repair Company*
Atlanta, Ga. — *Moncrief Furnace Company*
Chicago, Ill. — *Western Steel Products Company*

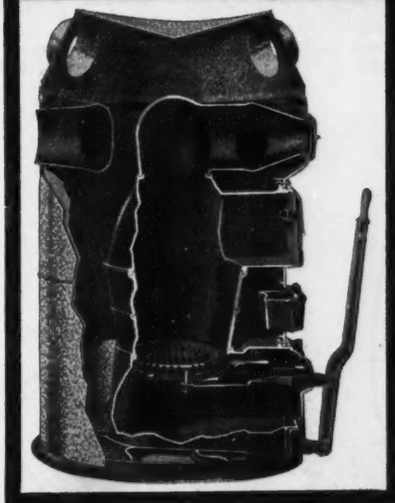
Group Two

St. Louis, Mo.—*MacRoy Supply Co.*
Kansas City, Mo.—*Kansas City Furnace Co.*
Duluth, Minnesota—*Marshall-Wells Co.*
Omaha, Nebraska—*A. Y. McDonald Mfg. Co.*
Lincoln, Nebraska—*A. Y. McDonald Mfg. Co.*
Sioux City, Iowa—*A. Y. McDonald Mfg. Co.*
Minneapolis, Minn.—*A. Y. McDonald Mfg. Co.*
Fort Dodge, Iowa—*Leighton Supply Co.*
Fargo, N. D.—*Fargo Cornice & Ornament Co.*

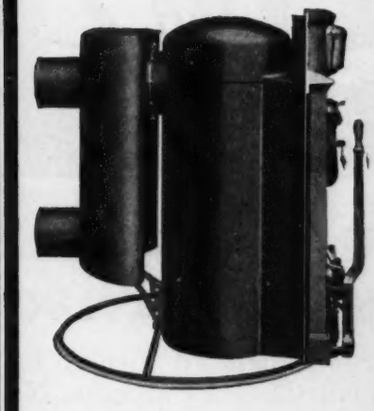
Group Three

Seattle, Wash.—*McPherson Furnace & Equipment Co.*
San Francisco, Cal.—*Pacific Sheet Metal & Furnace Co.*
Winnipeg, Man.—*Marshall-Wells Co.*
Saskatoon, Sask.—*Wood-Vallance Co., Ltd.*
Regina, Sask. — *Wood-Vallance Co., Ltd.*
Edmonton, Albta.—*Marshall-Wells Alberta Co., Ltd.*

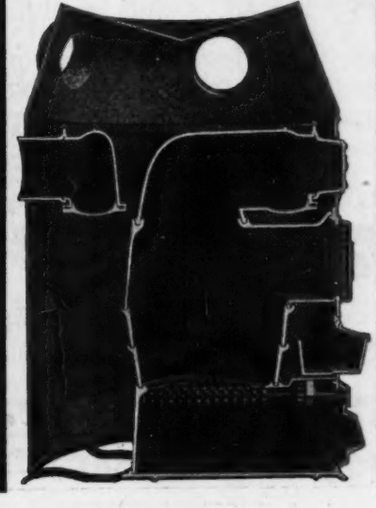
EASIEST TO SELL



The 1000 Series Sunbeam with one-piece radiator; duplex grates; all vertical joints eliminated.



The improved Steel Furnace with full height fire pot; duplex grates; no joint between drum and casing.



The C Series Sunbeam, unsurpassed in heating ability and long life. Hundreds of thousands in use.

EASIEST TO BUY

SUNBEAM
WARM-AIR FURNACES

AS you well know, a single objection on the part of a prospect, can deprive you of a profitable sale. The objection may be to your payment terms; to the quality of your furnace; to the reputation of the furnace manufacturer; to price, or something else. The lightest disadvantage in your proposition frequently becomes a mountainous objection in your prospects' minds, when you ask them to sign on the dotted line.

Sunbeam has provided heating contractors with everything necessary to close a sale. Common objections have been anticipated and eliminated. Hundreds of Sunbeam dealers, year after year, obtain the bulk of the heating business in their communities, because Sunbeam Furnaces are easiest to sell.

Sunbeam Furnaces are easiest to buy because tremendous production, large scale purchases and modern manufacturing methods make costs surprisingly low; because they have every advantage that you or your prospects could desire; because there is a type—cast or steel—and size, for every requirement.

The coupon below will bring complete information. Return it, NOW.

The FOX FURNACE CO., Elyria, Ohio

A Division of American Radiator & Standard Sanitary Corporation

PLEASE send complete information about your 1930 Proposition.

Name .....

Address .....

City and State .....

A-2

McILVAINE OIL BURNER

LISTED AS STANDARD BY UNDERWRITERS' LABORATORIES

Approved by New York Board of Standards and Appeals

Continuous Flame Automatically Governed

THE McILVAINE is scientifically correct for warm air furnace installations. It is quiet and clean. No cracking of furnace firepots. No opening of furnace joints. Its continuous flame, mechanical draft and graduated control insure continuous warm-air circulation, with the highest efficiency—greatest economy—freedom from odors and trouble.

McIlvaine Oil Burners (since 1924) are giving perfect satisfaction in the finest homes—in all types of warm-air furnaces, steam and vapor boilers and hot water heating systems. They have demonstrated their dependability, economy and efficiency in actual service.

See Our Exhibit January 27-31
International Heating and Ventilating Exposition
Philadelphia

Write for descriptive literature and complete information
Find out if your territory is still open

McIlvaine Burner Corporation

747 Custer Avenue, Dept. A, Evanston, Illinois

MAJESTIC BETTER HEATING NEWS

Published by THE MAJESTIC COMPANY, Huntington, Indiana

Master Majestic Gives Dealer Sales Advantage

These Things May Measure Your Future Profits

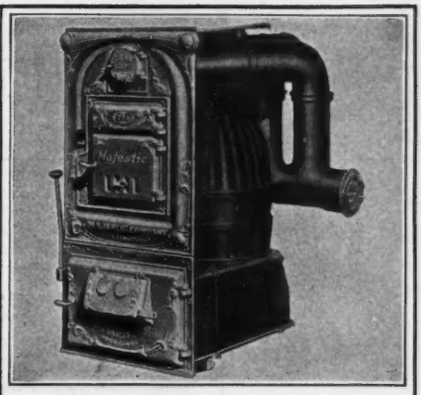
THE complete air conditioning unit is the heating system of today and the future. You have seen it grow and grow in demand as the public has become educated to its advantages over other forms of heating.

If you have not yet recognized the opportunity that complete air conditioning offers you, then we advise you to waste no more time about becoming thoroughly familiar with this most up-to-date of all heating systems.

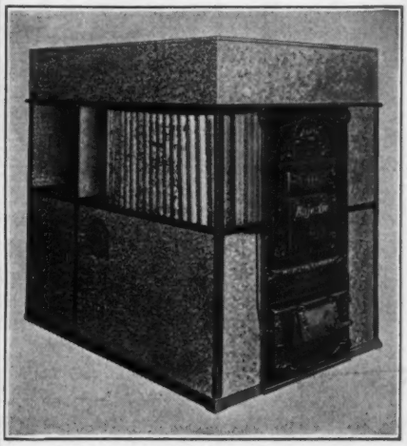
Perfectly uniform heat—healthful humidification—cleaned and filtered air forced to every corner of the house by fan. These are the things that thinking buyers want—and we predict that the way you use them will be the measure of your future prosperity as a furnace dealer.

Here's Something You Want

We are anxious to get all the facts about Majestic furnaces and our Dealer Sales Plans, into the hands of all first-class furnace dealers, but we do not want to send this information out indiscriminately. Therefore we are asking our readers to use the coupon which is printed on this page. You are not obligated in the slightest way by requesting the facts, and there are several features that we feel sure will be sufficiently interesting to repay you for your trouble in mailing the coupon. Do it.



The Master Majestic Down Draft furnace with square casting removed—the heart of a really efficient heating plant.



Master Majestic Down Draft Air Conditioning Unit—forced warm air, filtered and humidified. All pipes taken off top.

The Majestic Company
Huntington, Indiana

Please give me full information about Majestic Heating Systems and Dealer Sales Plans.

Name.....

Firm.....

Street.....

City and State.....

THERE is as much difference between an ordinary furnace and a Master Majestic Down Draft, as there is between a bicycle and an automobile. Both the bicycle and automobile have wheels and are methods of transportation, but that's where the resemblance ends.

With the Master Majestic you have something to sell besides a mere estimate on the installation. You have quality and features and guaranteed results that lift you above and ahead of cheap, price-cutting competition.

It Can't Be Ignored

First of all—with a Master Majestic—you can make the flat assurance of absolutely satisfactory heating results. You can go all the way with that statement. You need not hold back the fraction of an inch. You can make it so positive that your prospect can't ignore it.

Then you can sell him the reasons why you can make such an assurance. You can point out feature after feature of the Master Majestic, that are not to be found in ordinary furnaces.

The extra long smoke travel—about 22 feet as compared with eight or ten in ordinary jobs, is an example. You can easily explain what this long smoke travel means in extra heat and extra economy.

Other Impressive Features

The massive combustion chamber, the big two-section fire pot with the self-cleaning slots, the gearshift type shaker, the ball-bearing grates, etc., are points that speak quality in capital letters—quality that goes back to the scientific design and conscientious construction that are bred into every part of this furnace.

Sell a Master Majestic for what it is and what it will do. Sell a scientific Standard Code installation along with it, and you can make a cleaner, faster deal—and a far greater profit than you'll make on half a dozen cut-price jobs. Think it over.

THE
PIPE AND ATH-A-NOR PIPELESS
FURNACE

the furnace that is truly in a quality class by itself

THE buyer of a heating system instantly shows preference for the Ath-A-Nor Warm Air Furnace because of its exclusive features and all around quality construction.

It generates excessive heat and its scientific proportions provide extensive heating surface.

It's just the furnace you need to give you real quality selling features.

Its exclusive Three-Way Air Blast means complete combustion, saving of fuel—more heat and

SMOKELESS

economical operation

Besides the Ath-A-Nor the May-Fiebeger line includes several styles and a complete range of sizes in both cast iron and steel furnaces. Every May-Fiebeger furnace is high grade and reasonably priced.

The May-Fiebeger Co.
Newark, Ohio

First Aid To Winter Comfort

4 to 6 jobs a day—one man—powerful—light.

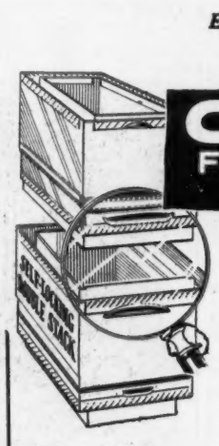
FURNACES not cleaned last fall are terrors today; eating up coal—giving little heat. They pay good profits to owners of Super Service Cleaners who go after them now.

Tell your coal dealer friends about this service. They need it to hold their business and are glad to cooperate with live owners of our cleaners.

You can get this rapid, one-man outfit on easy terms. Write today.

The National Super Service Co.
816 Lafayette Street Toledo, Ohio

Established 1902



CHICAGO FURNACE PIPE AND FITTINGS

Make your 1930 installations pay you a bigger profit and advertise your good work—

By Using This Better Pipe with NEW LOCKING Device

THIS quality furnace pipe which has been a big favorite for over 27 years is even a bigger favorite now.

The exclusive Chicago Locking device makes it the quickest locking, strongest locking pipe on the market.

Ask for a free sample of Chicago Pipe TODAY

We are distributors for the *Peerless Furnace Fan*—an efficient and economical fan in 12 [illegible] 18 inch sizes. Write for circular and prices.

WIECHERT AND CHICAGO FURNACES AND REPAIRS — *Write today for our complete catalog No. 22* — GET ALL YOUR WARM AIR SUPPLIES FROM THIS SOURCE

CHICAGO FURNACE SUPPLY CO.
1276-78-80-82 Clybourn Ave. CHICAGO

Guarantee your customers *humidified warm air*

with the

FARRIS WATERBASE FURNACE

YOU assure your customers of *constant automatic* and *adequate* humidity with this furnace. The Farris Waterbase feature has been in successful use in thousands of homes for many years.

It is practical and highly efficient.

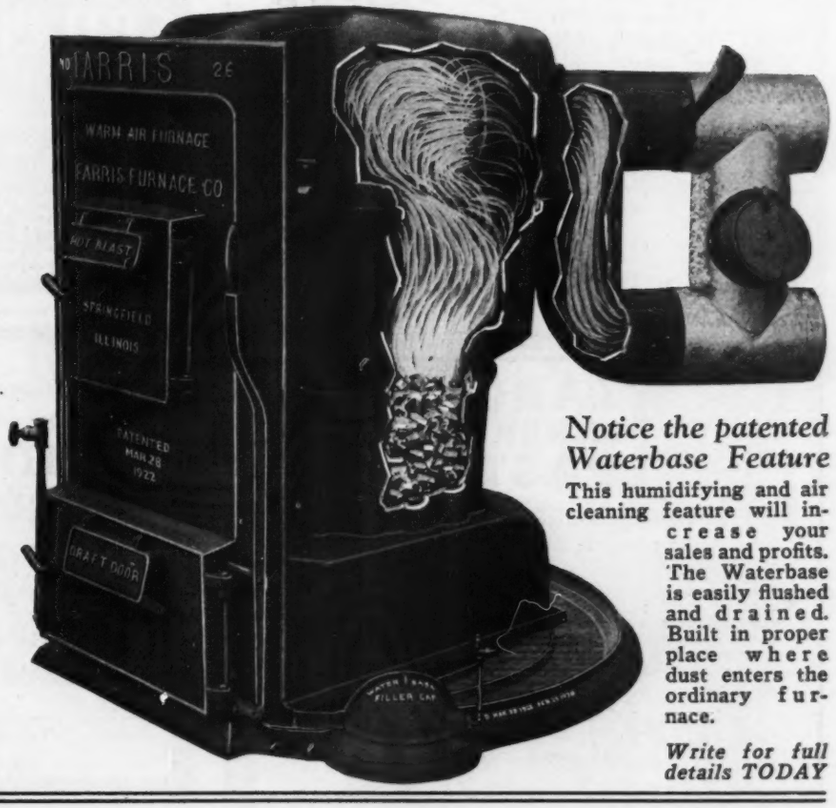
This feature makes the Farris the only furnace that will not stir up dust with fan installation.

You sell true *air conditioned* warm air heating with the Farris—find out all about it now.

Of course, only an extra high grade furnace in every other respect would be worthy of this important exclusive feature.

Write today for our catalog which gives details of other features and agency details.

FARRIS FURNACE COMPANY
SPRINGFIELD, ILL.



Notice the patented Waterbase Feature

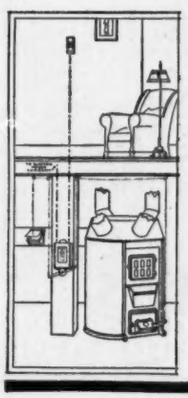
This humidifying and air cleaning feature will increase your sales and profits. The Waterbase is easily flushed and drained. Built in proper place where dust enters the ordinary furnace.

Write for full details TODAY

ONLY $48 INSTALLED

"Sheer Comfort" Heat Regulator will do anything any other heat regulator will do—*and more.* It gives *completely* automatic temperature regulation over any coal, coke or gas burning, warm-air, hot-water or steam heating plant *plus four exclusive* safety features found in no other device. And it sells, installed, for *one-half* the price of any similar device on the market.

Thousands have been installed—it is fool proof—trouble proof—nothing to oil—nothing to require service. It is guaranteed by this 40-year old manufacturer.



"Sheer Comfort" will make money for you for 9 out of 10 home owners are prospects. There is no price competition—easy to install and exceptional profits for you. Get the "Sheer Comfort" proposition from your jobber or write,

H. M. SHEER COMPANY
213 Hampshire St. Quincy, Illinois

SHEER COMFORT
heat Regulator

BRILLION FURNACES

Extra Value for Your Customers—
Extra Profits for YOU

WHEN you take on the Brillion line of furnaces you start giving your customers better value and at the same time your cost per furnace will be lower.

That means extra profits for you because Brillion Furnaces have the quality and features that in other furnaces would cost your customers more.

Our low overhead—our different sales policy—our lack of high priced non productive executives makes it possible to sell this high quality at prices that give you a larger profit.

Send the coupon today

BRILLION FURNACE CO., 17 N. La Salle St., Chicago.
200-300 Park Ave., Brillion, Wis.
Send me full details and Catalog No. 60.

Name .....

Address .....

THE "Alamo" LINE
of
Chas. Smith
HOT WATER HEATERS

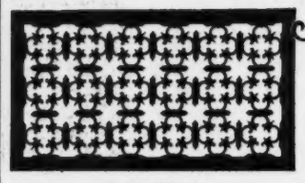
THE Improved GEYSER water heaters are exceptionally popular. They are unusually efficient, easy to install and because of their shape they heat more water than other castings of same size. They do not interfere with firing or fuel bed. Made in three sizes to fit all sizes and types of boilers and furnaces. They heat 30 to 50 gallon tanks. No. 4 tapped for ¾ inch pipe. No. 5 and No. 10 tapped for ¾ inch and 1 inch pipe. The No. 10 is tapped on top and side.

Write today for special circulars showing complete line of water heaters for Domestic water and also for heating hot water radiators for combination jobs.

ALAMO HEATER CO.
6143 Wentworth Ave. Chicago, Ill.

NO. 4 GEYSER Tapped for FURNACES

Ornamental HIGHTON Ventilating
GRILLES & REGISTERS
COMPLETE LINE IN CAST AND WROUGHT METALS



For all grille and register requirements write
Wm. Highton & Sons
Div. Hart & Cooley Mfg Co.
Nashua, N H

A New Furnace Paste

LARCO MINERAL PASTE

Non-Cereal Non-Souring Keeps after Mixed

For Better, Neater, Quicker Work

Asbestos Paper does not absorb as much Larco Mineral Paste as it does cereal pastes. Paper does not become soggy—not so apt to tear.
Larco Mineral Paste does not turn brown—no stains—mice will not touch it either when moist or dry and it does not gum up the hands.
Larco Paste can be kept on hand mixed ready for use as it does not sour. It has greater covering qualities.
It slips easily but adheres permanently.

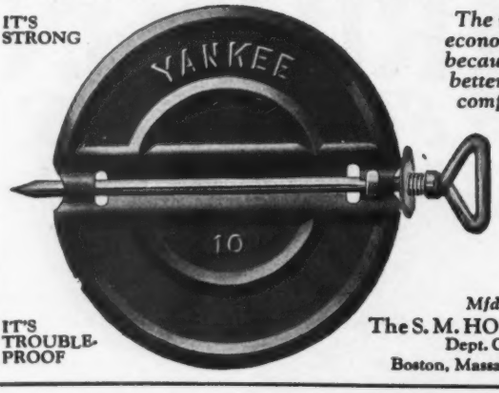
Write for circular which tells all about it—get Larco prices.

LARSEN-BENNETT CO.
OMAHA, NEBR.

"American Seal"
FURNACE CEMENT
Roof Cement — Stove Putty
Plumbers Putty
PAINTS and SPECIALTIES
WILLIAM CONNORS PAINT MFG. CO.
TROY *Established 1852* NEW YORK
JAMES L. PERKINS
Western Distributor
140 S. Dearborn St., Chicago, Ill.

HOWES YANKEE HOT-AIR DAMPER

IT'S STRONG

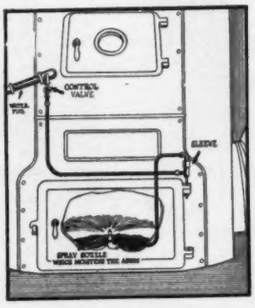


The most economical because it's better and complete

IT'S TROUBLE-PROOF

Mfd. by
The S. M. HOWES CO.
Dept. G.
Boston, Massachusetts

Every Furnace User Wants One
FURNACE DUST
ELIMINATOR



MAKE a hit with your customers —include this patented feature on every new installation—costs little but makes the job of removing ashes a clean, easy task.
It prevents dust from spreading throughout the home—saves grates and fuel.
Fine nozzle spray settles the dust. A turn of the control valve before shaking or removing ashes does the trick. High quality throughout—easily attached.
Get full details and prices today —make extra profits this season.

DUSTLESS ASH COMPANY
MUSKEGON, MICHIGAN

BOLTS

WE MANUFACTURE A COMPLETE LINE OF BOLT PRODUCTS, INCLUDING STOVE BOLTS, CARRIAGE BOLTS, MACHINE BOLTS, LAG BOLTS, NUTS, COTTER PINS, ETC. ALSO STOVE RODS, SMALL RIVETS AND HINGE PINS. CATALOG ON REQUEST.

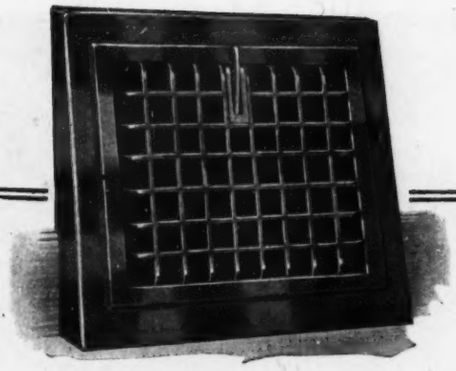
THE LAMSON & SESSIONS CO.
THE KIRK-LATTY CO.
1971 W. 85th St. Cleveland, O.

WE KNOW!

Is there a tool or machine that you need in your shop but haven't got because you don't know where to get it?
Ask us, we know who makes it and where you can buy it.

Information Bureau

AMERICAN ARTISAN
139 North Clark Street. Chicago, Ill.



The AUERISTOCRAT

of all registers, combining air capacity, decorative and concealing features.

Designed to conform with the Standard Code so they fit all standard boxes.

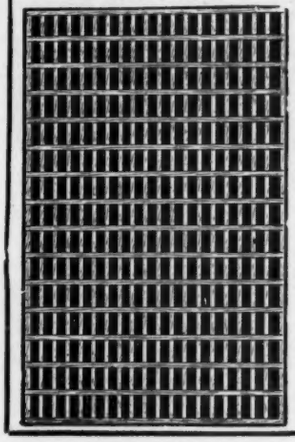
Auer Patented mechanical features make it perfect in operation,—quick and easy to install.

Auer's Save Hours and Dollars

The AUER REGISTER CO.
Cleveland, Ohio

INDEPENDENT REGISTERS--

VENTILATORS--GRILLES
"Fabrikated"
COLD AIR FACES
Any Size Any Finish
INDEPENDENT REGISTER & MFG. CO.
3747 EAST 93rd STREET CLEVELAND, OHIO
SEND FOR NEW CATALOGUE



AMERICAN WOOD REGISTERS

WHEN you order wood registers be sure of getting the best by buying these famous wood faces—

Known as the finest for over 21 years

They add extra value without extra cost. We make nothing but Wood Registers and only the best.

Write today for catalog and latest price list.

The AMERICAN WOOD REGISTER CO.
Plymouth, Indiana

What Do Your Customers Think?

Do they think that streaked walls above the registers are something one must put up with in a warm air heating system?

LOTS OF FOLKS STILL THINK SO.

NO STREAK

SHOW them this register which prevents streaking of walls—sell it on new installations and to replace registers that *do* streak the walls.

Send the coupon today—be prepared to show your customers that they can have *clean* walls above the registers.

ROCK ISLAND REGISTER COMPANY
ROCK ISLAND, ILLINOIS
Send me your catalog and price list.

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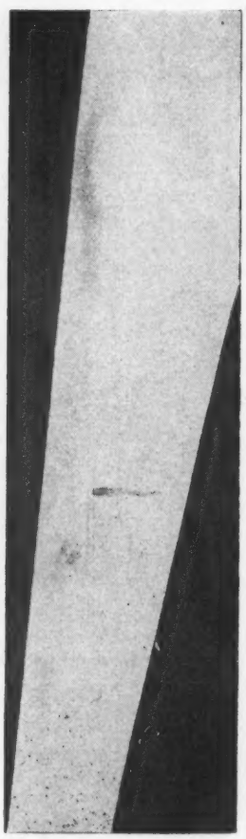

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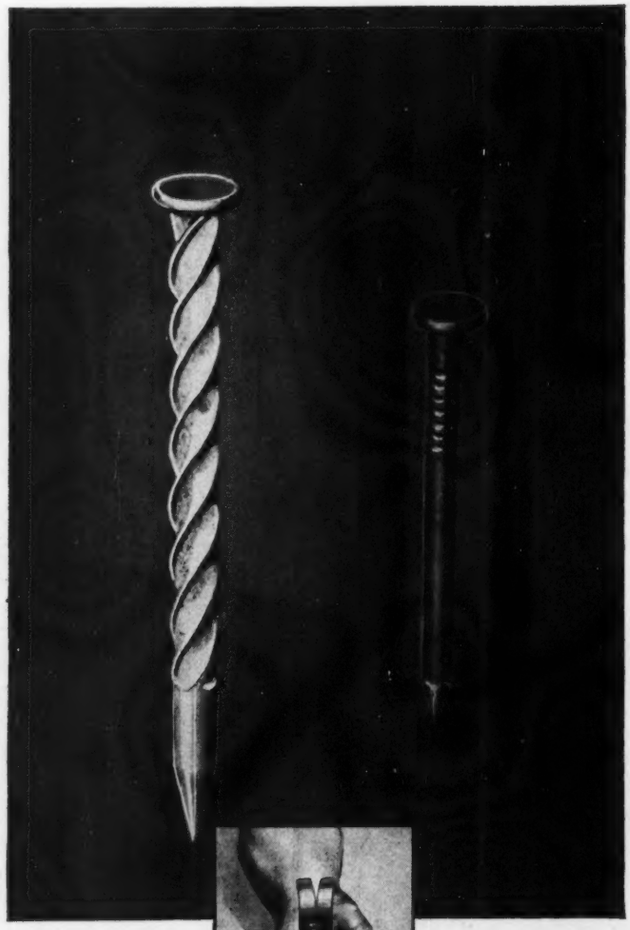

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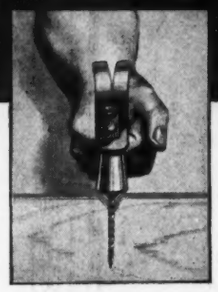

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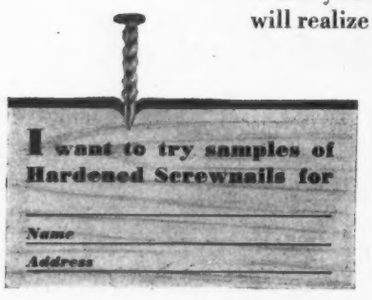

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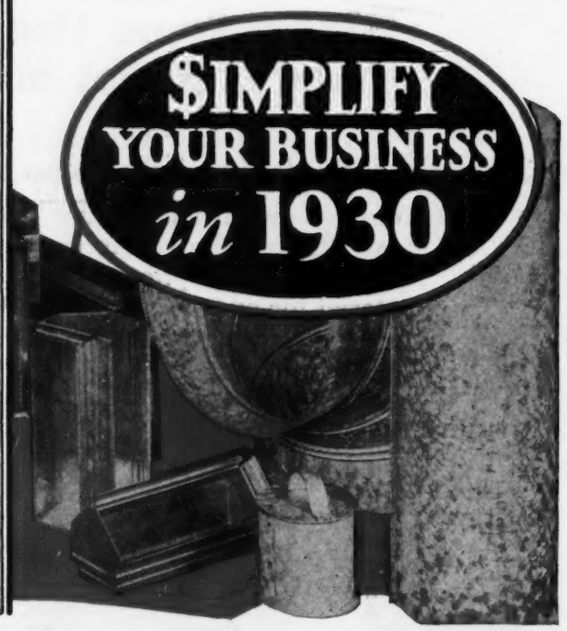

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Modernization of Homes Pays Big Dividends

Heating and Sheet Metal Men Should Get Behind Movement

IT goes without saying that a city or town is judged largely by the appearance of its homes. The stranger who drives through the streets passes summary judgment on the town based almost entirely on what he sees. The town is good or bad, depending on whether the residences are modern or antiquated in appearance. The buyer of a home also judges the value by the modernness of the equipment he finds in it.

There is just one aspect of the problem of modernization that is engaging the public at the present time. Civic pride demands that the city shall be comprised of smart appearing homes. The liveliness and progressiveness of the community from the outsiders' viewpoint depends largely on appearance.

Not only this but the desirability of living in a certain section of a town is based largely on the appearance of the homes in that vicinity. The better part of town is usually that part which can boast of the newer residences.

The desirability of a house is in a large degree a measure of its value. This desirability depends not only on its external appearance but also on the arrangement of the interior, the method of heating, the type of plumbing, the style of electrical fixtures, the choice of painting and decorating. If the home is up-to-date in these respects, it carries a higher value. If it is not modern, no matter how strong and substantially built, no matter how sturdy its construction, its intrinsic value is low. The home owner with a modern appearing residence can command a decidedly higher price than his neighbor next door whose home is old in design and layout.

And he can sell this modern residence in a slow market for these reasons.

Property value depends largely on the type of homes in the locality. The modernization of a residence will add value, not only to the house itself but also to property near it. This movement extended to a neighborhood will increase property value by ten or twenty per cent.

A Good Business Proposition

Modernizing a residence is a good business proposition. It lifts the house from the undesirables into the desirable classification. Old and undesirable property is good only for a first mortgage loan of less than 25 per cent its value.

On the other hand the same property modernized becomes good for a first mortgage loan of 50 per cent of its value.

The appraiser of the house judges largely by its appearance. He estimates its value not from the soundness of its timbers or the value of good workmanship that was put into it by the early building contractor, but by the outside lines, the floors, the plumbing, the lighting fixtures and other visible evidences of up-to-date construction. Such an estimate may seem superficial but it is based largely on the proposition of a quick sale. The appraiser is basing his figures on the reaction of a possible purchaser. He knows that the average purchaser of a home will buy sooner if the residence has the elements of modernization.

Hence the desirability of investing dollars and cents on modernizing program has a fundamental element of gain. The owner not only enjoys greater comforts and beauty but he also secures a greater value in his home for the money invested.

That's the masculine side of the picture. The man thinks of a better investment. Terms of value mean much to him. The woman, on the other hand, desires a modern home because of pride of possession, beauty of surroundings, comfort and utility.

Modernization brings new living comforts. Old fashioned stoves or antiquated types of heating plants are relegated to the background in favor of newer, modern methods of heating. Ugly, dusty-looking floors give way to beautiful hardwood, highly polished or waxed and easy to clean. Dingy electrical fixtures are superseded by modern fixtures and an abundance of electrical outlets, conveniently located to facilitate the use of the varied electrical appliances that ease the housewife's burden.

Modernization, you see, is more than a matter of the exterior lines of the house. It goes deep into the lives of the occupants. It touches them in every phase of their existence. It adds to the richness and fullness of their life.

Compound Elbow Angle Offers Good Practice in Triangulation

Sheet Metal Men, Particularly Heating and Blow Pipe Contractors, Are Constantly Called Upon to Furnish Apparatus Which Involves the Principle of Construction in the Compound Elbow

THE compound elbow angle presents an interesting problem, as well as demonstrates some of the fittings sheet metal men meet with.

The accompanying sketch illustrates a triangulation problem of a 45-degree compound elbow.

The plan makes a turn of 45 degrees on the arc of a true circle.

The elevation is constructed so that the outlet is vertical and the lower opening is at an angle of 45 degrees. The bottom is horizontal in cross section, and this cross section must not be decreased.

Begin Procedure by Erecting Perpendicular

To construct plan, erect a perpendicular to any convenient angle and, using point O as center, strike arcs 1-13 and 2-14. From O at an angle of 45 degrees to O-13 draw line O-1. From points 13 and 14 extend horizontal lines to the right. To locate the points A, B, C and D of the plan, it is necessary to construct part of the elevation.

To construct the bottom of elevation draw base line 13-14 and erect perpendicular from points H2 of plan to point 1′ and 2′ approximately in elevation. On these perpendiculars lay off the rise from 13 to 14, as 1 and 2, and the height from 1 to 1′ and 2 to 2′ of the opening. Through 1 and 2 draw the dotted horizontal base line and through 1′ and 2′ draw the horizontal top lines.

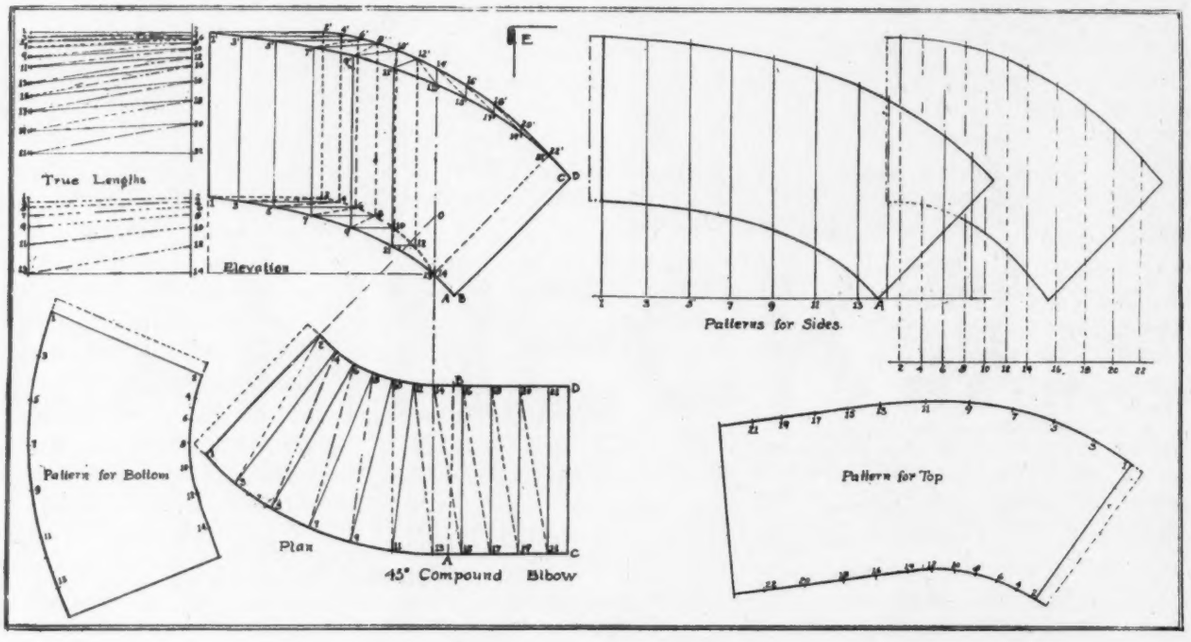
Construct a line 13-21 equal in length to 1-1′ and at an angle of 45 degrees with 14-13′. From 1 to 13 draw smooth curves for the bottom of the heel. Draw lines 13-A and 21′C perpendicular to 13-21′ and of the same length.

Join A and C with a straight line and drop a perpendicular from 21′, A and C to intersect horizontal lines extended to the right from 13 and 14 in plan. Divide arc 1-13 and straight line 13-21 into equal parts as shown.

Constructing Radial Lines

From points 1, 2, etc., to 13 draw radial lines toward O until they intersect arc 2-14, and from points 13, 15, 17, 19 and 20 erect perpendiculars until they intersect line 14-22.. Draw the dotted lines 2-3, 4-5, etc., and B-A. The dotted rectangle added at 1-2 shows the end of straight length beyond curve.

Erect perpendiculars from all points of division in plan to the



Pattern Construction for Compound Elbow Angle

height 1′-2′ of elevation. From the points at which perpendiculars from 1, 2, 3, etc., cut curve 1-13 in elevation project horizontal lines to right until they intersect perpendiculars drawn from 2, 4, 6, etc., as shown.

Through these points draw a smooth curve to 14. This completes the base of elevation. Before constructing upper curves in elevation we must lay out pattern for sides.

Drawing Pattern for Heel

The pattern for heel is constructed as follows: Draw a base line 1-A and step off spaces taken from arc 1-3 and line 13-C of plan. At these points erect perpendiculars to the height 1′ of elevation. Some of these lines will be too long, but that cannot be helped. The unnecessary parts of these lines will be erased after elevation is finished. From the points 1, 3, 5, 7, 9, 11, 13 and A project lines to right until they intersect lines of similar number in stretchout. Through these points just located draw a smooth curve. Now set compass equal to height of elbow, as 1-1′ in elevation, and keeping one leg on curve just completed, trace upper curve as shown.

This principle will keep the section uniform in size from end to end. From the points of intersection between new curve and perpendiculars of pattern extend horizontal lines to the left to intersect lines of similar number in elevation. Through these points just located draw curve 1′-21′.

Throat Pattern Development Similar

The pattern for throat is developed in the same way, except the stretchout spaces are taken from arc 2-14 and line 14-D of plan, and the horizontal lines are projected to right from points 2, 4, 6, 8, 10, 12 and 14 of elevation.

After completing the lower curve, the upper curve is constructed like that of heel pattern. The 2′-22′ curve is found and finished like 1′-21′. The dotted lines in pattern for sides show shape and position of strips riveted on to sides of seams.

Before developing the patterns for the top and bottom, it will be necessary to find the true length of dotted lines and solid lines of the top, as shown in the plan. The solid lines 1-2, 3-4, 5-6, etc., to 13-14 are shown in the true length in the plan and are equal on the bottom. To find the true lengths of the dotted lines 2-3, 4-5, etc., to 12-13 a diagram to the left of elevation is constructed. Therefore erect the perpendiculars 14-2 and 13-1 so that the space 13-14 is equal to the length of the dotted lines in curve of plan. Project horizontal lines from points in the elevation base curves to left to locate points 1, 3, 5, etc., 13 and 2, 4, 6, etc., 14 as shown. Join points 2 and 3, 4 and 5, 6 and 7, etc., to 12 and 13.

Developing Bottom Pattern Requires Care

To develop pattern for bottom take 1-2 from plan and lay it down as 1-2 of pattern. Then with 1 as a center and the compass set equal in radius to a space on lower curve between 1 and 3 of pattern for heel side piece, describe an arc through 3 and from the true length diagram take the length 2-3 and, using 2 as center, describe arc to intersect arc 3 at point 3. Then with 3 as center and radius equal to 3-4 in plant, describe arc 4. Now take the space on the lower dotted curve but one between 2 and 4 of pattern for throat as radius and 2 as center, describe arc 2-4. Continue this procedure until 13 and 14 are located, then add straight portion, as 13-A to 14-B in elevation.

Top Pattern Development Same as Bottom

The pattern for top is developed in the same way, except that the true lengths of 3-4, 5-6, etc., must be found in the diagram, because the top is not flat.

The spaces as 2-4, 4-6, 6-8, etc., are taken from the upper solid curve of the throat pattern and the spaces 1-3, 3-5, 5-7, etc., are taken from upper solid curve of the heel pattern. Again allowances must be added for seaming. The true lengths of dotted lines must be found as for the bottom.

The perpendicular distance from 2-22 to the closer points is equal to the length of solid lines, while the distance to the farther points is equal to length of dotted lines in plan.

The Road to Profits in the Warm Air Heating Industry

THE profits, volume of business and good will in store for the heating contractor who will attack his problems from a scientific standpoint instead of the old rule-of-thumb angle, are unbounded.

Today the world, through educational enlightenment, demands quick, accurate and lasting results from labor. From the field of power production by public utilities and other large users of fuel, can well be adopted some of the lessons learned by them.

Let us begin by supposing that you are called to one of the many mid-Victorian homes still in existence, that has always been cold in winter. You are told to make the furnace burn right. An inspection of the furnace, heat pipes, grates, etc., does not disclose anything unusual, but still the furnace does not burn properly. It does not give out the heat that it should. The answer to this problem undoubtedly lies with the draft and flue of the plant.

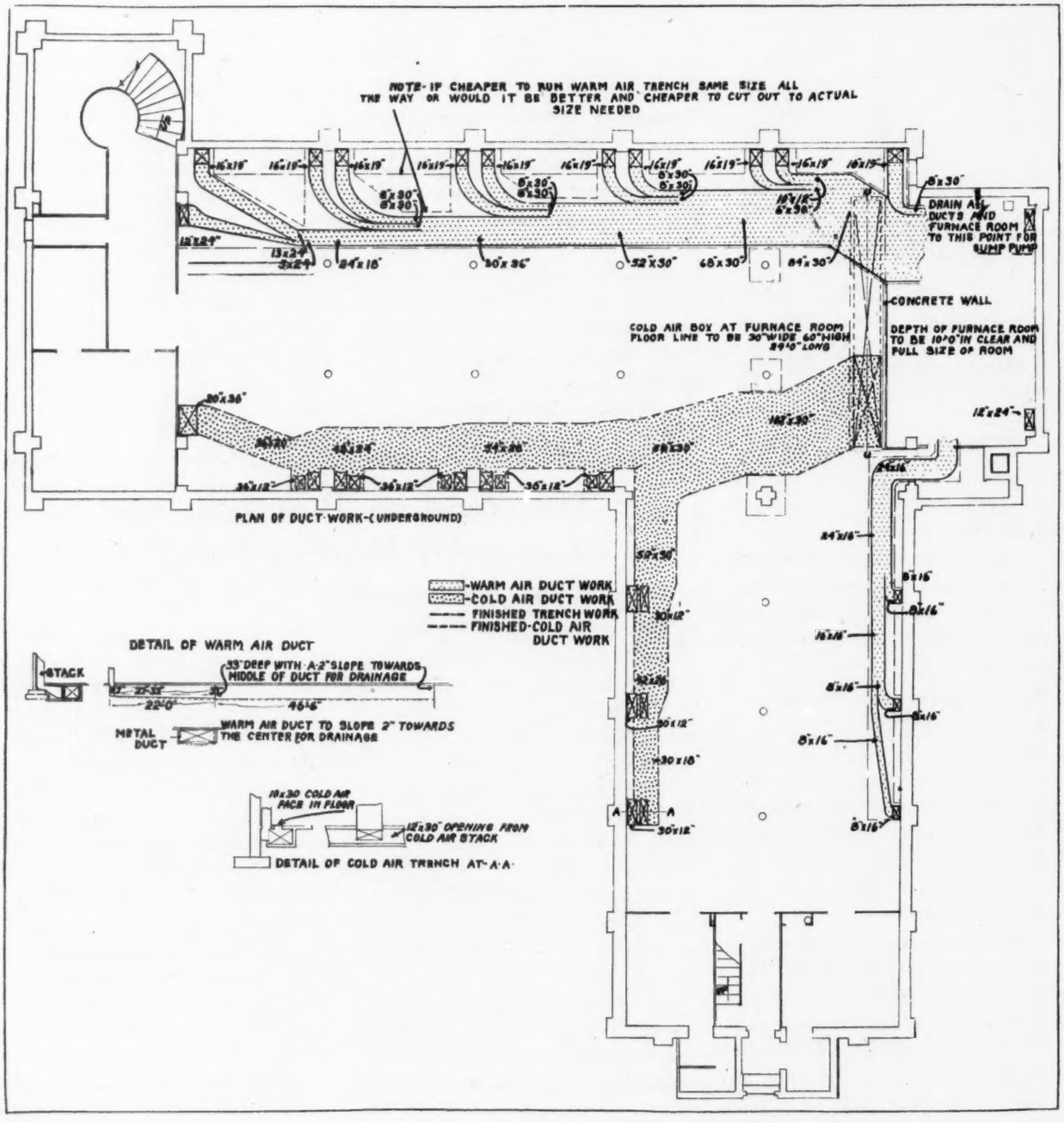
The first step is to clean the furnace and smoke pipe leading to the chimney. After this open the drafts in the smoke pipe and close the furnace tightly with the exception of the ash pit door. Light a piece of paper and hold it in the ash pit. Watch how it burns. A correct draft will cause the paper to burn rapidly. If it does not, the trouble lies in the flue between where the smoke pipes leave the furnace and the top of the chimney.

What to Know to Land the Big Jobs

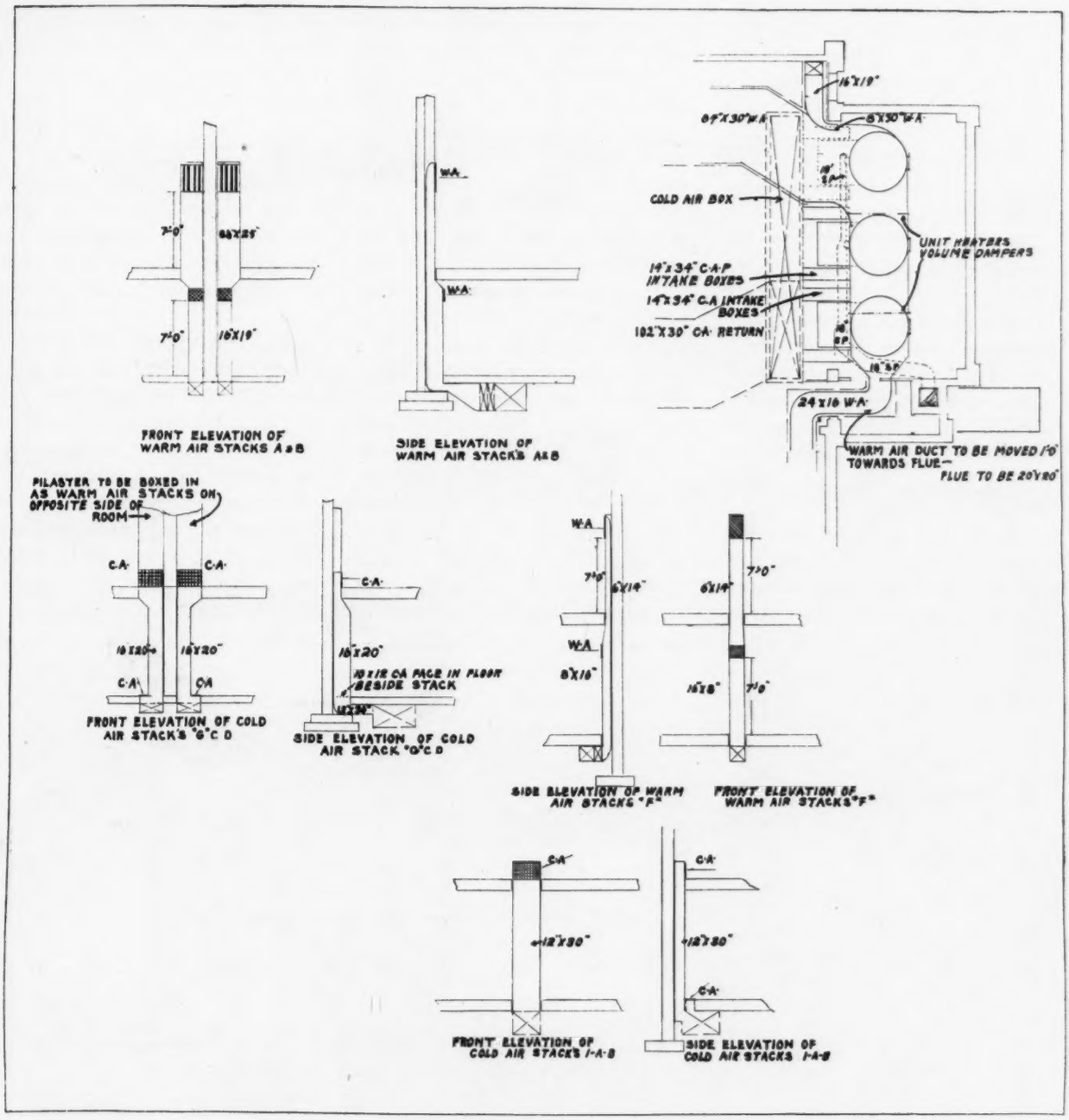
By E. B. LANGENBERG

THE problem of heating churches with a warm air system, either gravity or mechanical, requires fully as much careful consideration and accuracy as when any other type of heating plant is used. Too much of this class of work, however, has been done by guess, and it has only been due to the inherent ability of a warm air furnace to produce excess capacity by overfiring that any degree of satisfaction has been recorded by the occupants of buildings wherein the heating plant has been improperly designed and installed.

With the advent of the research work done by the experiment sta-


NOTE- IF CHEAPER TO RUN WARM AIR TRENCH SAME SIZE ALL THE WAY OR WOULD IT BE BETTER AND CHEAPER TO CUT OUT TO ACTUAL SIZE NEEDED
DRAIN ALL DUCTS AND FURNACE ROOM TO THIS POINT FOR SUMP PUMP
CONCRETE WALL
COLD AIR BOX AT FURNACE ROOM FLOOR LINE TO BE 30" WIDE 60" HIGH 29'0" LONG
DEPTH OF FURNACE ROOM TO BE 10'0" IN CLEAR AND FULL SIZE OF ROOM
PLAN OF DUCT WORK-(UNDERGROUND)
WARM AIR DUCT WORK
COLD AIR DUCT WORK
FINISHED TRENCH WORK
FINISHED-COLD AIR DUCT WORK
DETAIL OF WARM AIR DUCT
STACK
33" DEEP WITH A 2" SLOPE TOWARDS MIDDLE OF DUCT FOR DRAINAGE
METAL DUCT
WARM AIR DUCT TO SLOPE 2" TOWARDS THE CENTER FOR DRAINAGE
18x30 COLD AIR FACE IN FLOOR
12"x30" OPENING FROM COLD AIR STACK
DETAIL OF COLD AIR TRENCH AT A-A

Sheet No. 1


FRONT ELEVATION OF WARM AIR STACKS A & B
SIDE ELEVATION OF WARM AIR STACKS A & B
COLD AIR BOX
UNIT HEATERS VOLUME DAMPERS
14"x34" C.A.P INTAKE BOXES
14"x34" C.A INTAKE BOXES
102"x30" C.A. RETURN
24"x16" W.A.
WARM AIR DUCT TO BE MOVED 1'0 TOWARDS FLUE
FLUE TO BE 20"x20"
PILASTER TO BE BOXED IN AS WARM AIR STACKS ON OPPOSITE SIDE OF ROOM
FRONT ELEVATION OF COLD AIR STACKS "C" D
SIDE ELEVATION OF COLD AIR STACK "C" D
10"x12" C.A FACE IN FLOOR BESIDE STACK
SIDE ELEVATION OF WARM AIR STACKS "E"
FRONT ELEVATION OF WARM AIR STACKS "E"
FRONT ELEVATION OF COLD AIR STACKS 1-A-B
SIDE ELEVATION OF COLD AIR STACKS 1-A-B

Sheet No. 2

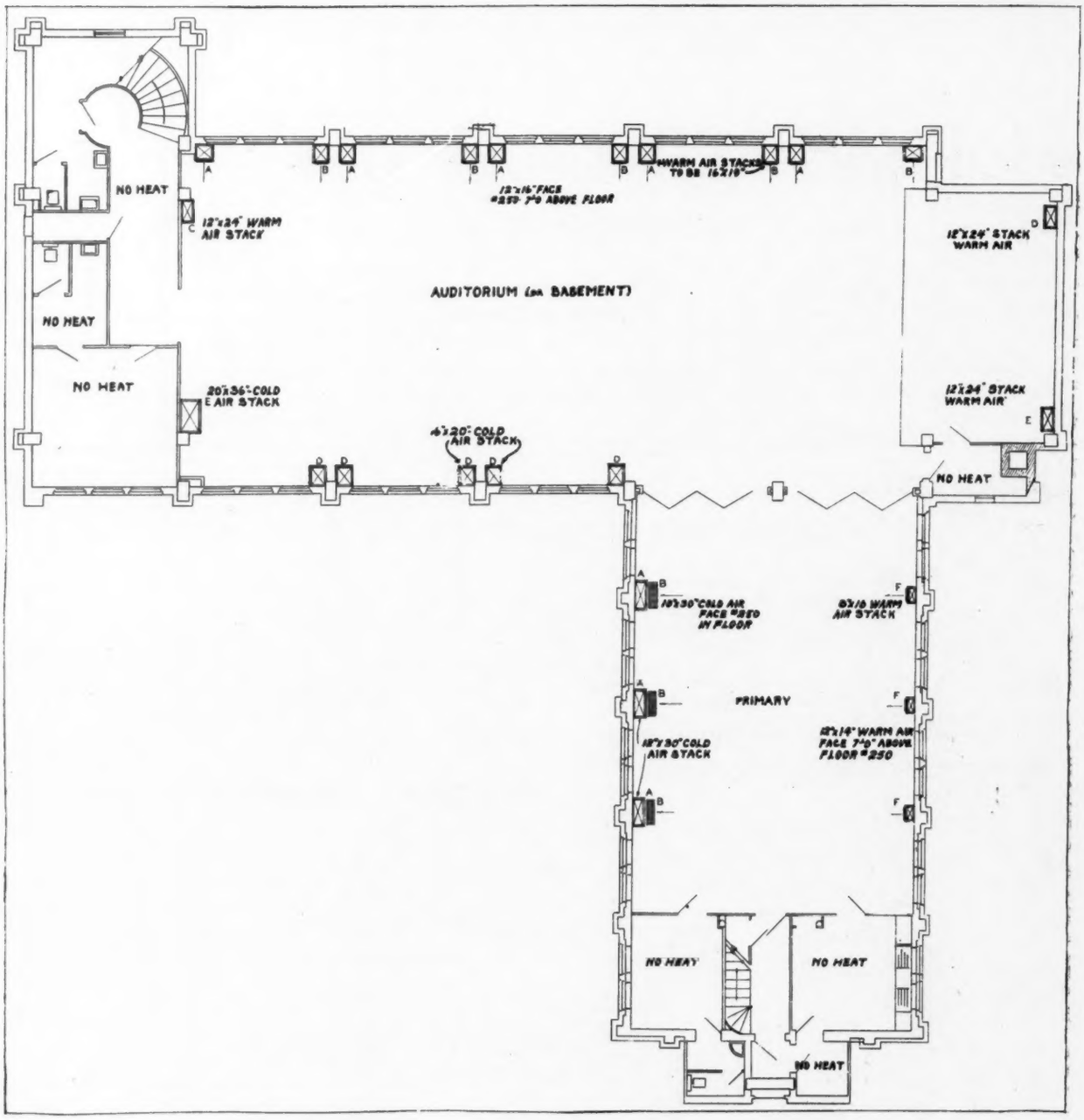
tion of the University of Illinois in co-operation with the National Warm Air Heating Association, a greater degree of accuracy is developing among the installers and much better engineering principles are being utilized to perfect the design of church installations. The same might also be said for ali classes of warm air heating. The standard code, evolved from the laboratory and years of practice, fully covers the installation of this type of system in residential work. This code, however, is not very well adapted to large buildings and for this reason the installer has to turn to the engineer for more accurate methods of computing heat losses and better methods of installation.

An effort will be made in this article to show how computations are made in this field, together with the application of the principles necessary to provide comfort and good air conditions to the occupants of a church.

A Church Job

The church used for this illustration is of Gothic design, the main auditorium being 36x106x55 and the wing being 31x61x14. A 9-foot finished basement is built under each wing for assembly purposes. The heater room is directly under the altar. The depth of this heater room is 14 feet, thus making it possible to run both warm air and cold air pipes underneath the basement floor.

The most difficult problem from the heating contractor's viewpoint was the fact that the building was built on solid limestone and the space for the air ducts had to be ex-



Sheet No. 3

cavated in solid rock beneath the basement floor. In the case of the warm air pipes it was necessary to make the excavation larger than the pipes as under no consideration were these metal ducts permitted to touch any of the rock work. The reason for this is that a heavy heat loss occurs by conduction when in contact with stone or other material. These pipes were covered with air-cell paper. Some pitch to

Sizes of Openings in Church Floor for C. A. and W. A. Ducts			
A	10½ in. x 27 in. finished opening in floor	G	18 in. x 30 in. finished opening in floor
B	10½ in. x 27 in. finished opening in floor	I	18 in. x 32 in. finished opening in floor
C	16 in. x 30 in. finished opening in floor	J	28 in. x 36 in. finished opening in floor
D	16 in. x 30 in. finished opening in floor		
E	16 in. x 30 in. finished opening in floor		
F	8 in. x 16 in. finished opening in floor		

the pipes was possible, although the pitch was not sufficient for gravity flow of air. Manholes were provided at several points for access to this work.

In the case of the cold air excavation, the bottom and sides were made smooth with cement and it was not deemed necessary to use metal pipes as the heat loss in these ducts would not justify the expense for them.

The entire underground system had a natural drain to the furnace room, so that at no time could water accumulate and have any effect on the system.

While no analysis has been made, as far as the writer knows, of the humidity in the air upstairs, the theory is advanced that the return supply would pick up a certain percentage of moisture from the walls of the return underground duct and have at least some small influence on the percentage of humidity delivered into the church. Where the vertical ducts connect with the underground ducts the joints were made air-tight and the entire system from the return inlet to the warm air outlet was sealed so as to prevent any possibility of dust or dirt getting into the air passages.

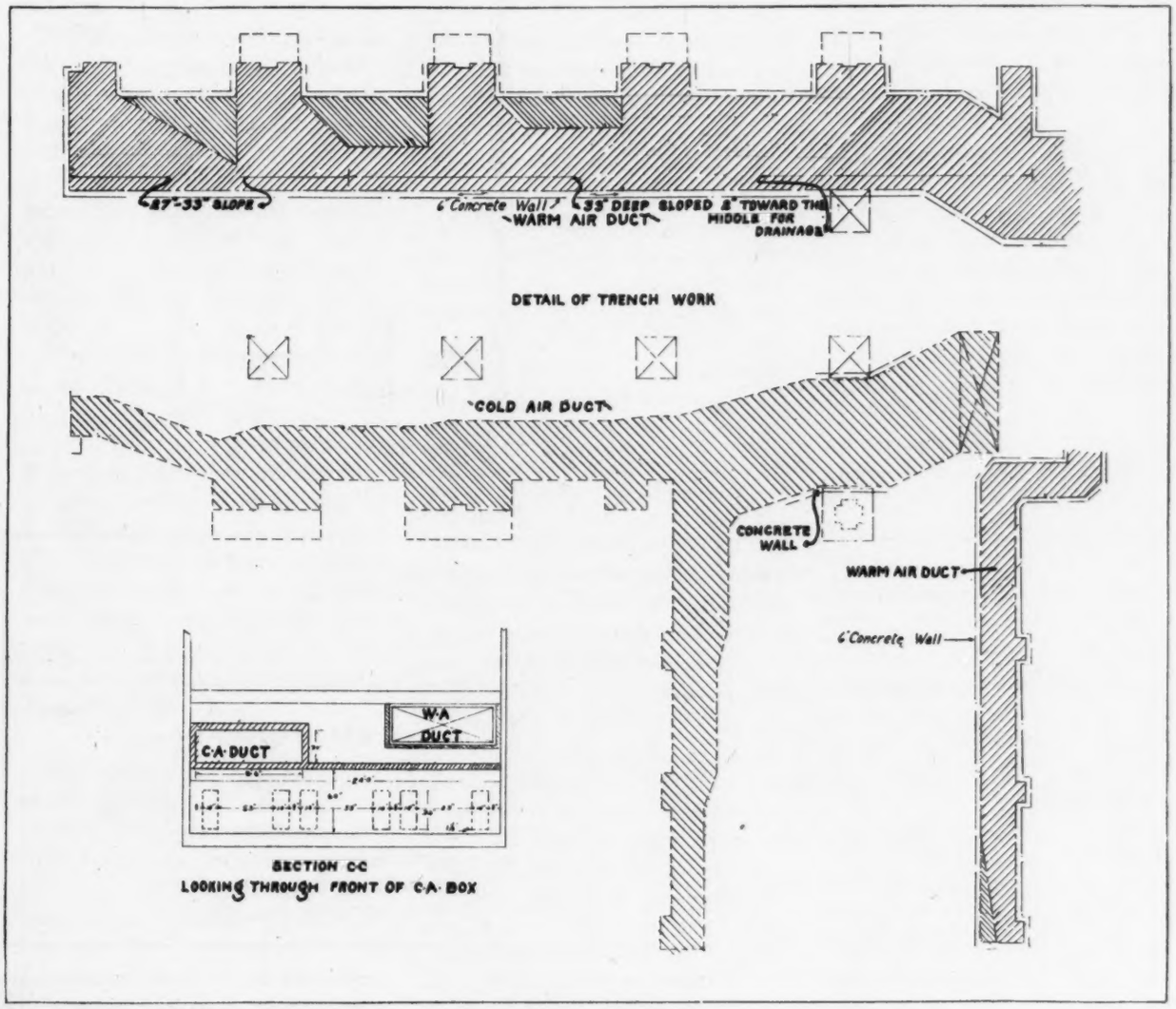
Sufficient Capacity Important

While it is oftentimes true that a church board or even an architect will advise the heating contractor that only one part of the building is to be heated at a time, experience proves that this is seldom if ever carried out and it is good business to figure capacity enough to take care of the entire building at all times. Failure of most heating systems in churches can be traced directly to the lack of capacity of the heating system and the necessity for overfiring beyond the safe and ordinary use of the apparatus installed.

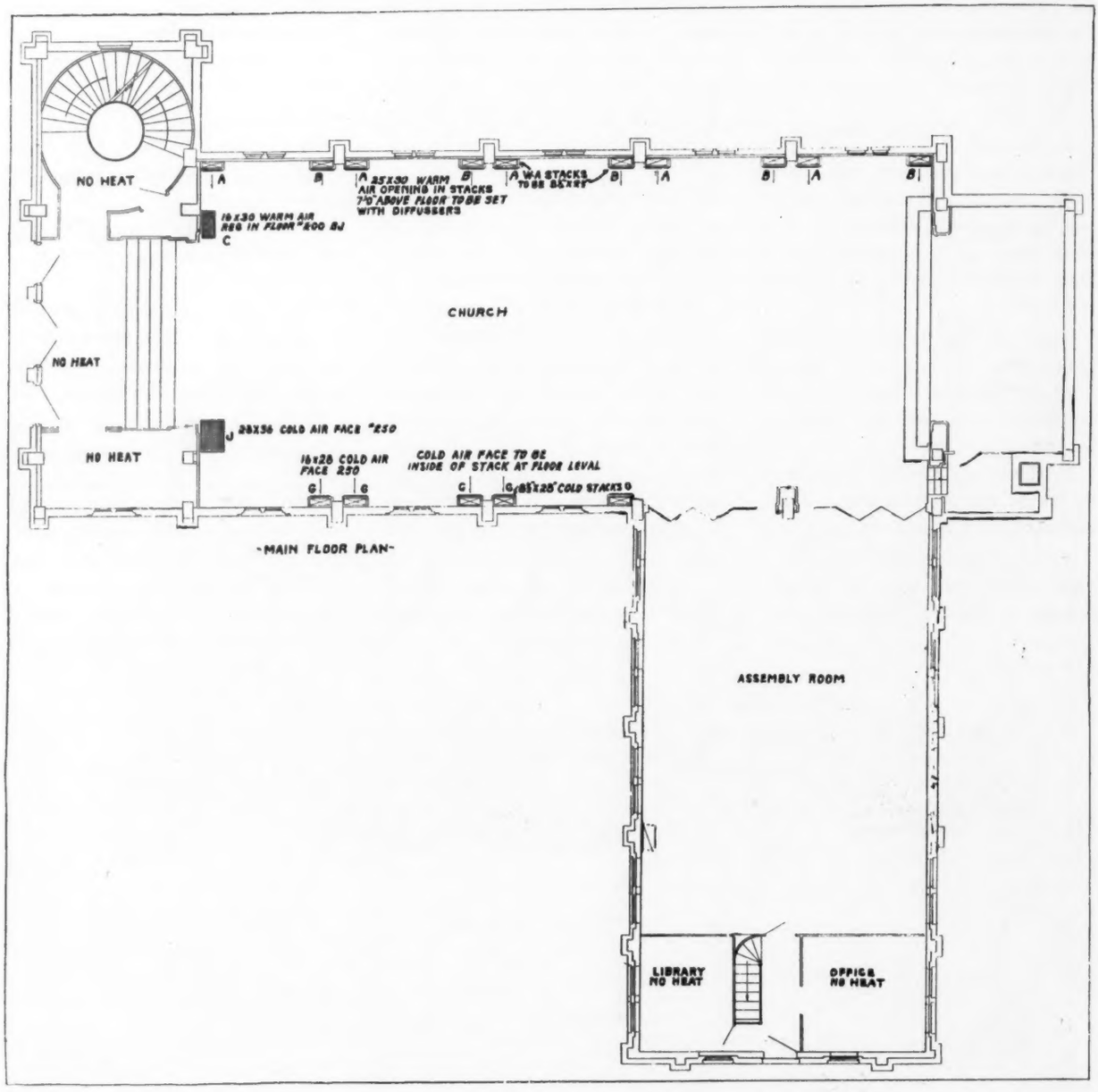
The detailed drawings show the many complications that had to be met in the furnace room to bring the duct work to the furnaces without reducing areas or developing too much friction.

Consideration also had to be given to the possible noise developed by the fans and also any noise developed by the air movements. No criticism has been raised on this point since the installation was made.

The heating plant consists of three vertical tubular steel furnaces, each equipped with a specially constructed fan placed at the rear of the furnace. The casings around



Sheet No. 4



Sheet No. 5

SIZE OPENING AUDITORIUM FLOOR FOR W. A. & C. A. DUCTS

	Warm Air		Cold Air
A	18 in. x 21 in. finished opening in floor	A	12 in. x 30 in. finished opening in floor
B	18 in. x 21 in. finished opening in floor	B	10 in. x 30 in. finished opening in floor
C	14 in. x 26 in. finished opening in floor	C	10 in. x 12 in. finished opening in floor
D	14 in. x 26 in. finished opening in floor	D	18 in. x 22 in. finished opening in floor
E	14 in. x 26 in. finished opening in floor	E	22 in. x 28 in. finished opening in floor
F	10 in. x 18 in. finished opening in floor		

the furnace were carried up on each furnace independent of the other, but the canopy was made to cover all furnaces as a single unit.

The fans consisted each of two 24-inch blades closed in the center and spaced 11 inches apart. Air was drawn from both sides of the fan. Each fan was operated by a

¾ H. P. 3-phase 60-cycle motor, each capable of approximately 4,000 cubic feet per minute. They were also supplied with extra pulley and belt so that the fans could be speeded up during the hot weather and the system used for creating a considerable air movement in the building. No attempt was made to cool beyond a possible 1½ degrees, this much of an effect to be secured by the air passing through all cold underground ducts. A flexible canvas connection was made between the fan and each of the casings to prevent air escaping.

The smoke pipe from each furnace was connected to a trunk and carried through a plenum chamber to a 20x20 flue. The effect of carrying this stack through the plenum chamber was to temper the cold air, reduce the flue loss and economize in the use of fuel.

Volume dampers were placed in the canopy so that any combination of units could be fired separately or together to heat any definite portion of the church. These dampers also controlled the volume of air sent to the various parts of the building and while under manual control were to be regulated according to the direction of the wind and its velocity.

The outlets in the basement and on the first floor were seven feet in the clear above the floor line. Those on the first floor were equipped with deflecting vanes or diffusers so that regardless of velocities there would not be a blast developed that would create air currents objectionable to the occupants. All risers were boxed in and lathed and plastered and on the first floor were flush with the columns so that no piping was visible.

Computations

The computations consisted of a careful figuring of the glass, the net exposed wall, the roof and the cubic contents. Three air changes per hour under control were computed and a temperature rise of 50 degrees. The lowest recorded temperature where this job happened to be installed was 15 degrees above zero and the temperature called for 5 feet above the floor was 65 degrees. On account of the height of the ceiling in the main auditorium it was felt that the capacity of the plant should be independent of any temperature rise created by the occupants.

The loss from infiltration was not taken into consideration because of temperatures prevalent in that locality and the capacity of the plant. The total B.t.u. requirements for the building were 1,369,350.

The fuel used was oil and the range within which the burners were to operate varied from 3½ gallons per hour per furnace to six gallons per hour, the lower rate being for ordinary working conditions and the higher rate to take care of extremes in temperature and excess losses caused from infiltration and wind velocities in excess of 15 miles per hour. The efficiency of the burner and unit was based on 80 per cent as determined by flue gas losses when the apparatus was originally under test.

Instructions Important

Safety factors in the computations run as high as 25 per cent and due consideration was given for balancing the system when working under any particular combination.

A complete set of blue prints and working drawings were provided the church for filing for record and complete instructions were issued on how to control, operate and service the entire plant. The latter item is one of the utmost importance, as too often a mechanical job of this character is turned over by the heating contractor without giving proper instructions on its operation and such a system placed in the hands of irresponsible people causes dissatisfaction and trouble to all concerned. When, however, the plant is operated by competent persons under complete instructions, one can be assured that such an installation will last for many years and be a source of satisfaction to the makers, installers and users. Study these plans carefully, as they will aid you.

*Reprinted from the September issue of Heating, Piping and Air Conditioning.

Can You Advise Your Customers On Size Coke to Use?

Users of coke in domestic heating furnaces often have difficulty in deciding on the proper size to purchase in order to obtain the most satisfactory results, the United States Bureau of Mines has found. They also have little knowledge on how the adjustments of the dampers to give the best results are influenced by the size of coke used. The size purchased is usually decided by the advice given by the retail coalman or furnace installers. In districts where the sale of coke is well organized such advice will be based on the accumulated experience with the sizes available, but the relative results obtained by any one user when trying different sizes will depend on the draft produced by the chimney, the possibility of controlling the draft by the dampers, and on whether the size of the furnace is sufficiently large to heat the house without forcing the fire too much.

Extensive studies of the effects of the size of the coke have been made at the Pittsburgh Experiment Station of the Bureau of Mines. The settings of the dampers to obtain equally good results with different sizes were determined as well as the limiting size, larger than which it would be impossible to obtain such equally good results when using coke in an average size domestic furnace. It was found that the fire would go out at the low rates of burning required in domestic heating if the coke consisted entirely of pieces larger than those lying between a two-inch and a three-inch screen.

Comparing a small size coke (½ to 1 inch) with a large (2 to 3 inch), the advantages and disadvantages can be summed up as follows:

Advantages—With the small coke the favorable points are: (1) It is easier to start the fire; (2) it is less likely to go out; (3) there is more range of damper adjustment and thus the furnace will be more easily controlled; and (4) firings will not have to be quite as frequent as otherwise.

Overhead Expense — One Method of Correctly Apportioning It

Every Business Has Overhead Regardless of Size or Nature Which Must Be Included in Running Expenses

OVERHEAD expense is at one and the same time the most important and the most misunderstood of the tools employed by the sheet metal and warm air heating contractor. Thousands of dollars are lost annually and entire industries are demoralized because of a lack of a proper understanding of the application of overhead as a legitimate charge to business.

In order to understand thoroughly just what overhead expense is and what relation it bears to business generally, let us examine it and see what there is in it that makes it so mysterious and fearsome. But first, since the relationship between profit or loss and overhead is so close, our meaning can be still further clarified if we define profit at the outset. Mr. Webster says, "Profit is the excess of the price received over the *cost* of purchasing and handling, or of producing and marketing." With some slight modification this definition will fit the sheet metal and warm air furnace installing businesses as well as any other.

Profit = Cost Plus

There is one phrase in that definition which immediately arrests our attention, "the excess of price over the *cost* of purchasing and handling." Purchasing and handling for our purposes can be interpreted to mean buying raw materials and applying to them that skill in mechanics and management which transforms them into sheet metal gutters, downspouts, warm air ducts, cold air shoes, and installs them where they become service rendering entities.

Since your aim in engaging in business is to make a profit, and since there are certain charges or costs to be paid out by that business before any profit is possible, it behooves you as the manager or proprietor of that business to know what those costs are, so that you can charge the customer a price sufficiently high to enable the business to pay all charges against it and still show a profit.

Are You Guilty?

"When I buy a hat or a cigar, I know I pay part of the rent, the light and heat bill, the clerk's wage, and other inescapable costs entailed in storekeeping," writes E. M. West in "Advertising and Selling" on "The Consumer Speaks up."

In his article Mr. West says, "I am glad to pay not these specific items, of course, but for the courtesy and convenience I get. But I am not willing to pay, if I can help it, for credit losses, accounting errors, unwanted stocks, incomplete stocks, unskillful buying spoilage, missed discounts, usurious interest, and kindred charges that contribute nothing to my satisfaction but restrict my satisfaction. Every dollar paid for needless service or useless facilities reduces by one dollar what the consumer could spend for production of larger outputs to create greater wealth and more consumer buying power."

Mr. West evidently knows that simplified practice eliminates needless duplication and waste. Simplified practice reduces the varieties of any given commodities to those necessary to serve the demand.

To my mind the simplest and most direct method of determining the expense of doing any given piece of work is to allow the sales price to equal 100 per cent—divide the expense into four classifications, namely, cost of raw materials, cost of labor, the profit desired, and the overhead expense. Someone will probably criticize me at this point for putting "profit desired" in there, arguing that you don't know what the profit on the job will be before the job is completed. To which I reply that if you don't make provision for a profit in your original price, how do you expect to find a profit there in the end? In order to hit the bull's eye, you've at least got to aim at it.

Labor Costs Not Hard to Estimate

You don't seem to have much difficulty in arriving at the cost of raw materials, or of the cost of labor, although some of you still do get mixed up in taking off your discounts properly, and generally come out of the small end of the funnel when that happens. Your labor costs, too, are definite, tangible things that can be readily pinned down, although some modification of that statement will be made later on.

When it comes to the fourth item, however — overhead expense—aye, there's the rub. The mere mention of overhead to some men seems to bring forth all the terrors of an evil genii or of a child with the cholic, and why? For the simple reason that they don't understand it and fear what they do not understand.

There is nothing so terrible or mysterious about overhead. It is merely the assembling into convenient form for charging to each job a proportionate share of the running expenses — non-productive labor charges—of a business. It becomes necessary to make these proportionate charges in this way because the items so assembled are of such nature that they are not chargeable to the jobs direct in the

same manner that productive labor and material charges are. They are expenses incident to the running of the business and must be passed on in proportion to the amount of service the customers receive.

We've all heard plenty of stories of those well-meaning but misguided men who delude themselves into thinking that because they do their own bookkeeping, own their own buildings, and generate their own gas that they have no overhead, or at least are only charging about half of what they should charge to overhead. The sooner we can replace those ideas with some definite information on just what overhead is, showing that it is ever-present and that it is eating up profits in many cases, the better it is going to be.

List of Overhead Items

I believe that to examine a list of overhead expense items at this point will be illuminating to many men here today. Listen carefully and see whether you agree that the items I am about to name are legitimate charges against the business as overhead expense.

1. Salary of proprietor for managing the business.
2. Rent on building.
3. Light.
4. Heat.
5. Telephone.
6. Autos—running expense and repairs.
7. Bookkeeper.
8. Insurance—all forms.
9. Taxes.
10. Cartage.
11. Car fares.
12. Bad accounts.
13. Driver's salaries.
14. Waste materials.
15. Lost hours of labor.
16. Replacements — defective goods.
17. Allowances.
18. Interest on Capital investment.
19. Postage.
20. Stationery and printing.
21. Association dues.
22. Donations.
23. Fixtures.
24. Tools and Depreciation.

All of these charges, it can be established, are definite, legitimate charges against the business, and must be included in proportionate amounts in the charges made against each job. And this is done by determining what per cent of the total annual business the overhead charges represent. The figure arrived at is the one used in applying the overhead of each job—commonly known as loading. What the overhead figure is from year to year will be governed by the character of the business and the amount of business done.

Average Overheads on Business Done

For the benefit of men who have no records to guide them some authorities give overhead percentages for certain sized businesses, although, of course, it must be fully understood that every man's business would have an overhead peculiar to itself, and he must determine what that is himself. That is where the practice of keeping complete records of every job from year to year is found to be of invaluable service to the contractor.

From a tabulation of thirty cases ranging from $4,000 to $125,000 amount of annual business, it is found that below $10,000 the average overhead runs from 35 to 24 per cent. From $10,000 to $20,000 the average indicated runs from 25 to 20 per cent. From $20,000 to $50,000 the average figures are from 20 to 15 per cent, and above that the average is from 18 to 13 per cent, but it is a very rare occasion when the overhead on a business will go down as low as 13 per cent. About one case in twenty would be the ratio.

Too much stress cannot be placed upon the fact that these figures are averages only and as such mean absolutely nothing to the individual proprietor in attempting to arrive at his own overhead percentage. They are only given here as indicators of what a set of averages shows is the experience in those business classifications. You cannot say that because you are in the $20,000 to $50,000 class your overhead should be 25 to 20 per cent. It is not what it should be but what it is that counts.

Three facts then should be borne in mind in connection with the apportioning of overhead expense:

1. Know what proportion the overhead expense is of the annual business done. (Consult records of previous years' business.)

2. Use methods in estimating contract work that will reasonably assure the profit anticipated.

3. In fairness to yourself and family, your customers and supply dealers, know how much and what per cent of profit the business is making.

I said in the beginning of this talk that I believed the simplest and most correct method of apportioning the various charges is to permit the sale price of each job to represent 100 per cent. If the sales price represents 100 per cent, it follows naturally that—assuming that the bookkeeping is properly done—the four items—materials cost, productive labor costs, profit, and overhead expense—must all be taken into account before the 100 per cent will be made up.

Sales Price = 100 Per Cent

Without going into any algebra or advanced mathematics, let us see how this plan of letting 100 per cent represent the sales price would work out. Suppose for purposes of illustration that we have a business running to $20,000 annually. The ratio between our annual business and our overhead is predetermined at 25 per cent. And suppose further that we want 15 per cent profit. Then our two remaining items will equal the remaining 60 per cent of the whole. What then is our selling price going to be if our labor and materials or gross cost is 60 per cent, our overhead is calculated to be 25 per cent, and we have determined to have a 15 per cent profit?

In order to find the sales price under these conditions we have a convenient and well-tried rule which says: "To find the sales price divide the gross cost by the percentage which it represents."

Now suppose we take a job on

which we estimate that the material and labor or gross cost will run to $150. We've got to load this job with a proportionate share of our overhead and, of course, the profit we want to make.

Putting into practice what we've just said about letting the sales price represent 100 per cent, we find a line up of our four factors something like this: Overhead 25 per cent, profit 15 per cent, the remaining 60 per cent must be material and labor or gross cost. This we said was $150. Carrying out our rule of dividing the gross cost by the percentage it represents, we find that our selling price for the job is $250.00.

Then 25% of $250 (overhead)	$ 62.50
Profit 15% of $250	37.50
Cost of materials and labor	150.00
Selling price to customer	$250.00

If this job is taken at $250 and is executed in accordance with the usual despatch of your personnel, you have a reasonable certainty of making your 15 per cent profit on it.

Can You Afford to Cut Price?

That figure should be your basis of determining whether you can take the work any cheaper or not. The only figure that you can afford to play with in that representation is the 15 per cent profit. If you shave your labor and material or your overhead, you throw your costs out of line and you stand to lose.

You might say that if you were particularly anxious to get a job that you could afford to cut your profit in half or more and in that way reduce the price to the customer, but the point I am trying to make here is that before you start to cut prices you should know what you are doing. You should know that your materials and labor costs and your overhead costs are taken care of.

Don't be misled into believing that the man with the lowest overhead figure is going to make the most money. In fact the contrary is almost universally true. It generally happens that the man who does all of his own bookkeeping, takes care of his own autos, works in the shop, and never pays himself a salary for managing the business is only giving the customer something that he should be getting himself. The man who cuts prices does so because he actually believes he can cut prices and still make money. He cuts prices because he does not know what his costs of doing business are, little realizing the demoralizing effect his activities in this direction are having on the industry at large.

It is perfectly all right to take a job at a reduced price if you know what your costs of doing business are and take the work at a figure high enough to include and cover all of those fixed charges.

In working out your overhead percentage pay yourself a salary equivalent at least to what you would be able to get as the manager of some other man's business of a similar nature. If your wife, your son or your daughter does your bookkeeping for you, pay them what you would have to pay an outsider to do the same work.

Don't be like the man who thought he was getting away big by allowing his son (a school boy whom he paid nothing) to take care of his books, thinking that as long as he gave the boy plenty to eat and wear and a dollar or two for spending money upon occasion that he was getting along swimmingly, and then had hot coals a-plenty heaped upon his head later when he overheard the son say to one of his school chums, "Yes, I take care of my old man's books, I take care of my old man's business, and you can believe me I take care of myself too."

Ratio Between Expense Paid and Total Business Done

The fair way to determine the overhead expense load, assuming that all of the legitimate charges have been made to this account, is to find the ratio between the total annual business and the total annual actual expenses thus charged to overhead. I say this advisedly because if the manager does not charge the business with a salary for himself or if any one of a half dozen other items that properly belong in the overhead expense are not placed there, your percentage of load is not going to be correct and you are going to be disappointed in the profit actually made when the end of the year rolls around.

Every sheet metal and warm air heating contractor should take the attitude toward his business that his business and his shop is being maintained for the accommodation of the public. And that therefore it is only right and fair that the public who make use of or have need for this accommodation should and must pay for its maintenance.

When you buy an automobile, regardless of whether you have been influenced by the advertising done by that particular motor car company, or whether you have been impressed to the point of parting with your money by the sales room maintained, a part of the purchase price which you pay goes toward the maintenance of that sales room. The same is true of every other business. It is inescapable.

What About Slack Time Business?

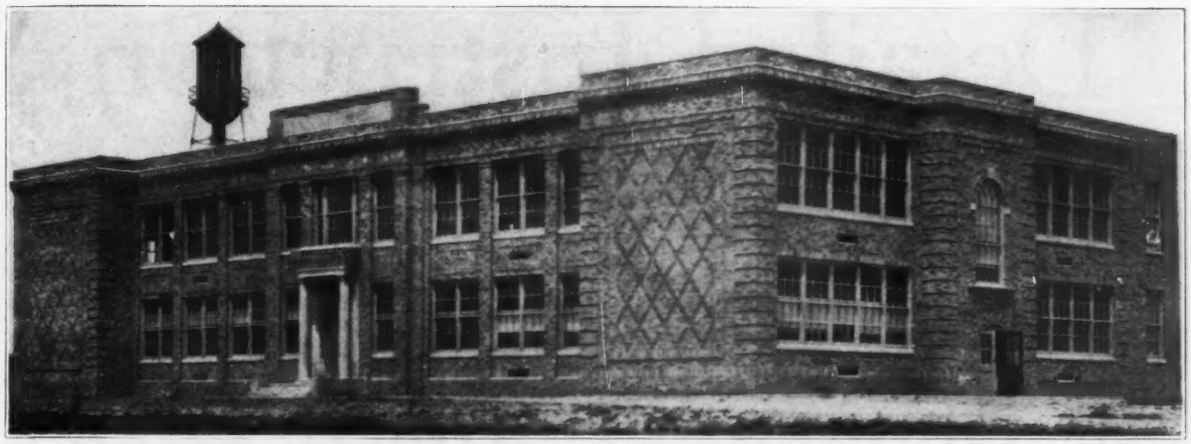
Very often we hear a man say that he takes work at a very small margin of profit during times of slack business, in order to help pay some of the running expenses. And the question immediately arises whether this is good practice.

The answer depends entirely upon whether the man knows exactly what he is doing and knows just about how far he can go in that direction without harming his business or demoralizing the industry in general.

There are times when the practice seems justifiable. The big danger always is that a man is very apt to make this thought a habit. The tendency then is to load up with unprofitable work to the extent that he cannot handle profitable work when it comes along. (Example: Tel. and Tel.)

The practice has an unquestion-

(*Continued on page* 41.)



Avon Grove, Penn., Consolidated School

Sheet Metal Plays Important Part in Modern School Construction

AT the new Avon-Grove School, just completed half way between West Grove and Avondale, Pennsylvania, we see a fine new building, with every conceivable type of modern equipment for the betterment of education and the comfort of the students. In this building sheet metal has again come to the use of the various places in this building where no other material could take its places, and again proving that no modern building can well do without it.

In the air ducts, sheet metal has been used, on the roof, the heavy sheet metal ventilators rear themselves in the air and help to draw the air in and out from this immense building where over 500 pupils must live daily.

A complete ventilating system is installed here and the ventilators on the roof are an integral part of this system.

In the domestic science kitchen are installed two long sinks and drains covered with the heaviest kind of sheet metal, designed to withstand hard usage.

The Avon Grove School is one of the latest of the modern equipped schools to be built in the State of Pennsylvania. Sheet metal has played an unusually important part, and in the construction of this building heavy copper has been used on the glass top which allows light to enter the large auditorium.

It is significant that, with the many new people who will visit this building within the next few months, many who are interested in what we are trying to explain here will see for themselves how great a part sheet metal plays in the modern school, and not only in schools but everywhere you turn.

Looking across the roof toward a group of five ventilators. These ventilators insure the exhaust of air breathed by 500 pupils. Copper framing was also used in the skylights.

Detailed Instruction on Application of Standard Furnace Code

THE Standard Furnace Code, compiled under the auspices of the National Warm Air Heating Association, has become so well recognized in the warm air heating industry that it is being incorporated into city building codes to an ever greater extent, and architects are, therefore, being forced to recognize it.

There are, however, a great many warm air heating men who are not yet thoroughly familiar with the Standard Code and its correct application; in addition, younger men are continually coming up from the ranks. Therefore, provision must be made to give them an opportunity to learn how to apply the code and the why and the wherefore of the whole.

A special representative of the National Warm Air Heating Association has during the past winter and early spring been making the most of the state convention with the objecting of attempting to give the Standard Code and its application a wider circulation.

In order that those men who were unable to hear this lecture, and also in order that those who did hear it may have an opportunity to refresh their memories on it, we are setting forth herein, as briefly as possible, the important phases of the talk.

Suppose we wish to heat to 70 degrees in zero weather a new brick veneer bungalow having five rooms and a bath on first floor, one bedroom on second floor, a stone wall bisecting the basement. The basement arrangement is shown in the accompanying Figure 1, the first floor in Figure 2, and the second floor in Figure 3. The chimney is 12x12 inches. The first floor ceiling is 8 feet high. The second floor ceiling is 8 feet high, and the basement is 7 feet.

Short Cut on Finding Cost of Job Also Presented and Analyzed

Table A

(The factor 60 used in the above example is for buildings constructed as in item No. 1. When other types of walls are used substitute the appropriate factor as given below.)

No.		
1.	Frame wall constructed of siding, paper, sheathing, studding, lath and plaster	60
2.	Frame wall constructed of siding or stucco direct to sheathing (no paper), lath and plaster	52
3.	9″ brick wall (no plaster)	40
4.	9″ brick wall plaster one side	48
5.	9″ brick wall, air space, furred and plastered	65
6.	13″ brick wall, no plaster	53
7.	13″ brick wall, plaster one side	57
8.	13″ brick wall, air space, furred and plastered	75
9.	4″ brick, 4″ hollow tile, plastered	55
10.	4″ brick, paper, sheathing, studding, lath and plaster (brick veneer)	68
11.	8″ hollow tile stucco and plaster	52
12.	8″ hollow tile, stucco furred and plastered	75
	Roofs	
13.	1″ T & G. sheeting, tar and gravel	48
14.	1″ T & G. sheeting and composition roof	40
15.	1″ T & G. sheeting and tin	24
16.	Corrugated iron on strips	9.3
	Ceilings	
17.	Lath and plaster without floor above	50
18.	Lath and plaster with tight floor above	90
19.	Metal lath without floor above	40
20.	Metal with tight floor above	70

Our problem then is first to determine the amount of heat loss in B.t.u. that occurs through the walls and ceilings of this brick veneer house, so that we can determine the size of the heating plant necessary to insure making good the heat loss.

Proceeding to the code, we first determine which direction the house faces, where the prevailing winds are from, and what are the sides of greatest exposure—that is, what buildings or tall trees that might afford some protection are in the immediate vicinity of the house to be heated.

Let us start with the living room. First we will take the total exposed glass area, which means the full casement area of the window. This includes outside doors, which are treated in the Standard Code the same as glass area. There are two windows on the north and two windows and one door on the east side of the living room having a combined glass area of 53 square feet.

Next, what is the square foot of wall area? The dimensions are 13 feet 6 inches by 14 feet, and our ceiling on the first floor is 8 feet high. Then our exposed wall area would be 13 feet 6 inches by 8 feet, plus 14 feet by 8 feet, which would give us 220 square feet. From this we subtract the 53 square feet of glass area, and our net square feet of exposed wall area is found to be 167.

Chart No. 1

Standard Code Formula
Divide glass surface by 12
Divide exp. wall surface by 68 B.Vn.
Divide exp. ceiling surface by 90 Flrd.
Divide cu. contents by 800
Outside doors considered as glass

Multiply totals by 9 for 1st floor, 6 for 2nd floor, 5 for 3rd floor

Add for unusual exposure N., N. E., N. W., 15%; E., W., 10%

Ceiling heights—
First floor—8 feet.
Second floor—8 feet.
Third floor—....

Name of room	No.	Exposures: Glass sq. ft.	Wall sq. ft.	Ceiling sq. ft.	Cubic contents	Glass divide by 12	Wall divide by 68	Ceiling divide by 90	Cu. con. divide by 800	Totals	Basement pipe area: Exposure			Size pipe used	Size pipe used
Living	..	53	167	182	1456	4½	2½	2	1¾	10¾	96	NE	110	12	113
Dining	..	48	72	...	1431	4	1	...	1¾	6¾	61	N	70	10	78
Kitchen	..	24	116	89	712	2	1¾	1	1	5¾	51	NW	59	9	63
Bedroom	..	36	148	132	1056	3	2¼	1½	1¼	8	72	SE	72	10	78
Bath	..	12	28	40	320	1	½	½	½	2½	23	S	23	8	50
Bedroom	..	36	148	132	1056	3	2¼	1½	1¼	8	72	SW	72	10	78
Bedroom	..	30	170	168	1344	2½	2½	1¾	1¾	8½	51	W	59	9	63
Total square inches of pipe area required													465		—
Total square inches of pipe area used															523
Cold air used															515

Now about the ceiling. We are going to have a considerable heat loss here and must provide for making this good. The ceiling is found to be 182 square feet.

We have still another factor to reckon with, and that is the cubical content of the room. This is found by multiplying the dimensions of the room, and is in this case 1,456 square feet.

The Standard Code tells us that the total glass area is to be divided by 12, which done gives us 4½. The total net wall area is to be divided by the factor in table A corresponding to "Brick Veneer," which is 68. This factor 68 represents the coefficient of heat transfer through a wall made of 4-inch brick, paper, sheathing, studding, lath and plaster.

We must needs have recourse again to Table A of the Standard Code to find the heat coefficient of heat transfer on ceilings, which in Table A is No. 18, or 90. Dividing 182 by 90 we get 2.

The Standard Code further tells us to divide the cubical contents by 800, which gives 1¾. Adding 4½, 2½, 2, 1¾, we get 10¾. The code then tells us to multiply this figure by 9, since it is the first floor. This gives us 96, which is the basement pipe area of the warm air pipe, which we must use to make good the heat losses in the living room.

However, the code has made further provision for exposed walls, and Note 5 of the code instructs us to add 15 per cent for northeast exposures. This addition gives a pipe area to be used of 110, but the nearest commercial size pipe is 113, so that is what we have used.

In the dining room exactly the same procedure is employed with the exception that the ceiling factor is not applied for the reason that there is a heated room above the dining room, hence the temperature and consequently the heat loss through this portion of the ceiling can be disregarded.

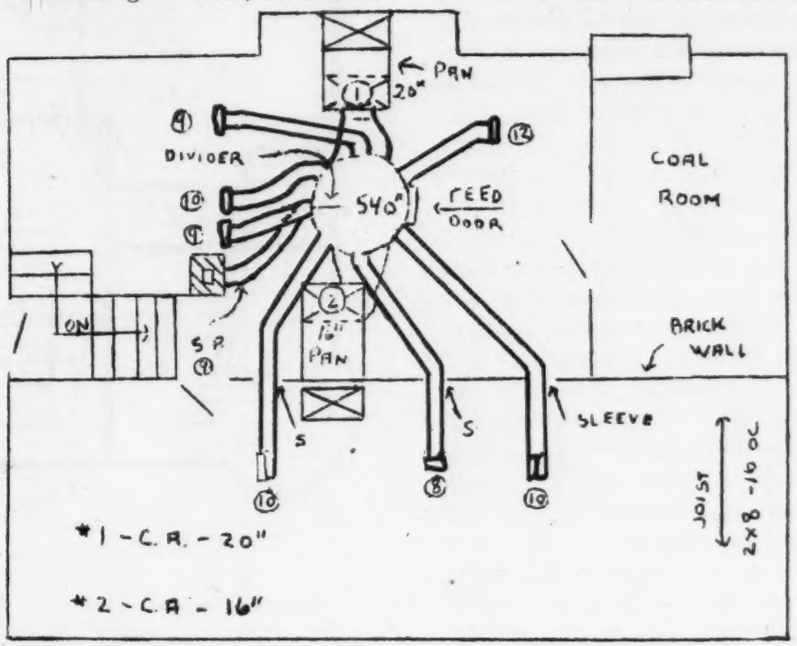
Now the bedroom on the second floor offers an enigma which the warm air furnace installer may not find so easy to get around. Referring to Figure 3 we find a room having two sides exposed to the northwest, while the remaining two sides are exposed to the cold attic. How are we going to calculate the heat loss from this room?

Proceeding as before, we find the exposed glass area to equal 30 feet, the net wall 170 square feet, the ceiling 168 square feet, the cubical contents 1,344 square feet. As above, we divide by the various heat transfer coefficients, and since this is a second floor, we multiply their sum by 6 instead of 9. Making the additions for north exposure, we use a 9-inch pipe.

In order to give the reader a clear conception of what has been done in this case, we have reproduced the the figures on Chart No. 1, which shows a total pipe area used for the warm air of 523 square inches. The total cold air used is 515 square inches.

Figure 1 shows the basement arrangement of both the warm air and cold air ducts and also the furnace.

It will be noted that three of the



Basement Layout

Second Floor Layout

warm air ducts pass through a stone wall in the basement. In order to insure an uninterrupted flow of warm air through these ducts it will be necessary to arrange for an air space around each pipe where it passes through the wall. If this is not done, the heat in the ducts will be largely absorbed by the wall and circulation will be materially impaired. The air space can be supplied by the use of a thimble or collar filled with insulating materials.

In the distribution of the cold airs it will be noted that a 20-inch and a 16-inch have been used instead of two 18-inch, as might have been expected. The reason for this is that although the dwelling appears to be evenly divided, this is not the case. Therefore, were the cold airs to be made of equal size, an unbalance in the system would result; that is, there would not be sufficient pipe area to carry away the air from the large portion of the house. One cold air would be overloaded, while the other would not be doing its full share of the work. To avoid this situation, the one cold air was made a 20-inch and the other a 16-inch.

This is a very important observation, and every furnace installer should see to it that a correct balance is maintained, otherwise trouble will result. You may have followed the Standard Code strictly in every respect and still find that the system will not work. The first place to look for the trouble is in the balance of the system.

In addition to giving these pointers on the application of the Standard Code the representative had a short method of figuring the cost of the job which, when applied to 100 of his own jobs, he claimed was not more than a dollar or so out of line with prices as obtained when complete costs on the job were worked out. These prices were tabulated as follows:

1 furnace and casing, 540 sq. in.	$165.00
1 wall stack to second floor	16.66
1 12-inch duct to living room	20.66
1 10-inch duct to dining room	15.93
1 9-inch duct to kitchen	13.58
1 8-inch duct to bath room	11.25
2 10-inch ducts to bedroom	31.86
5 feet of smoke pipe	4.49
1 16-inch cold air return	25.52
1 20-inch cold air return	37.47
Total	$342.58

Of course these prices are not given as a guide to what an installer should charge but merely to indicate how it is possible to reduce the cost of any given piece of work on the job to one figure so that it can be used for quick reference.

We can still further analyze the method by way of showing just how for instance the figure of $11.25

First Floor Layout

was arrived at. Let us take the charges on the 8-inch baseboard warm air opening apart and see of what they consist.

8" Baseboard Warm Air Opening

	List	Disc.	% Cost	Sell
1 BJ reg. 2½"	$2.00	40-10	$1.08	$1.62
1 reg. box	.85	50-10	.39	.59
1 offset	.45	50-10	.32	.48
1 boot	.95	50-10	.43	.64
10 ft. IC tin pipe	.33	50-10	1.50	2.25
1 4-pc. 90° elbow	.55	50-10	.25	.37
2 2-pc. 30° angles	.30	50-10	.28	.42
1 side collar....	.40	50-10	.18	.27
1 W. A. damper	.22	Net	.22	.33
6 lbs. asb. paper	.05	Net	.30	.45
½ lb. paste.....	.10	Net	.05	.08
Total			$5.00	$7.50
Labor, 50% of material.			2.50	3.75
Installed cost price.....			$7.50	
Installed selling price, which includes cost of labor, material, overhead and net profit..				$11.25

Again on the 9-inch duct to the kitchen we have a charge of $13.58.

9" Baseboard Warm Air Opening

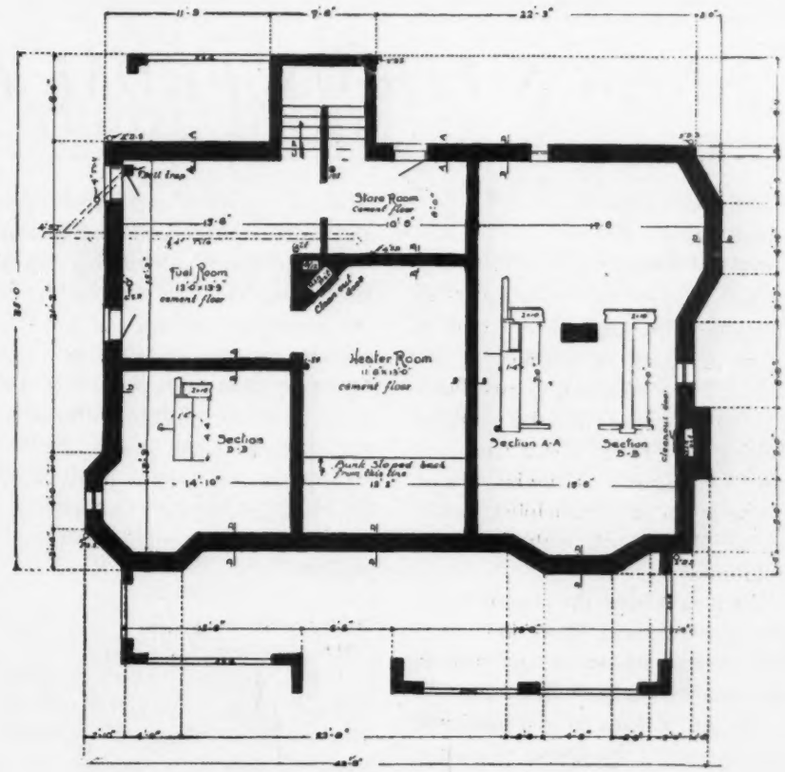
	List	Disc.	% Cost	Sell
1 BJ reg. 2¼"	$3.00	40-10	$1.62	$2.43
1 reg. box	.95	50-10	.43	.64
1 offset	.80	50-10	.36	.54
1 boot	1.05	50-10	.48	.72
10 ft. IC tin pipe	.37	50-10	1.70	2.55
1 4-pc. 90° elbow	.60	50-10	.27	.40
2 2-pc. 30° angles	.35	50-10	.32	.48
1 side collar....	.46	50-10	.21	.32
1 W. A. damper	.26	Net	.26	.39
6½ lbs. asb. paper.	.05	Net	.30	.45
½ lb. paste	.10	Net	.05	.08
Total			$6.03	$9.05
Labor, 50% of material.			3.02	4.53
Installed cost price.....			$9.05	
Installed selling price, including cost of labor, material, overhead and net profit.....				$13.58

On the wall stack to the second floor, how did we arrive at the figure of $16.82?

9" Wall Stack to Second Floor

	List	Disc.	% Cost	Sell
1 BJ reg. 1¼"	$2.40	40-10	$1.30	$1.95
1 reg. box.....	.95	50-10	.43	.64
9 ft. single stack 3½x12	.46	50-10	1.89	2.84
1 offset	.62	50-10	.28	.42
1 boot	.95	50-10	.43	.64
10 ft. IC tin pipe	.37	50-10	1.70	2.55
1 4-pc. 90° elbow	.60	50-10	.27	.40
2 2-pc. 30° angles	.35	50-10	.32	.48
1 side collar....	.46	50-10	.21	.32
1 W. A. damper	.26	Net	.26	.39
6½ lbs. asb. paper	.05	Net	.33	.50
½ lb. paste.....	.10	Net	.05	.08
Total			$7.47	$11.21
Labor, 50% of material.			3.74	5.61
Total cost price.....			$11.21	
Installed selling price which includes cost of labor, material, overhead and net profit.....				$16.82

On the 10-inch duct to the dining room and the 12-inch duct to the living room likewise there are respective charges of $15.93 and $20.66 and they are arrived at in the following manner:



Foundation Plan

10" Baseboard Warm Air Opening

	List	Disc.	% Cost	Sell
1 BJ reg. 3¼"	$4.00	40-10	$2.16	$3.24
1 reg. box	1.00	50-10	.45	.67
1 offset	.85	50-10	.39	.59
1 boot	1.15	50-10	.52	.78
10 ft. IC tin pipe	.42	50-10	1.90	2.85
1 4-pc. 90° elbow	.70	50-10	.32	.48
2 2-pc. 30° angles	.40	50-10	.36	.54
1 side collar....	.50	50-10	.23	.34
1 W. A. damper	.28	Net	.28	.42
7 lbs. asb. paper.	.06	Net	.42	.63
½ lb. paste.....	.10	Net	.05	.08
Total			$7.08	$10.62
Labor, 50% of material.			3.54	5.31
Installed cost price.....			$10.62	
Installed selling price which includes cost of labor, material, overhead and net profit.....				$15.93

12" Baseboard Warm Air Opening

	List	Disc.	% Cost	Sell
1 BJ reg. 5¼"	$5.25	40-10	$2.84	$4.26
1 reg. box.....	1.30	50-10	.59	.89
1 offset	1.10	50-10	.50	.75
1 boot	1.40	50-10	.63	.94
10 ft. IC tin pipe	.51	50-10	2.30	3.45
1 4-pc. 90° elbow	1.25	50-10	.57	.85
2 2-pc. 30° angles.	.65	50-10	.60	.90
1 side collar...	.60	50-10	.27	.41
1 W. A. damper	.35	Net	.35	.52
8 lbs. asb. paper.	.06	Net	.48	.72
½ lb. paste.....	.10	Net	.05	.08
Total			$9.18	$13.77
Labor, 50% of material.			4.59	6.89
Installed cost price.....			$13.77	
Installed selling price which includes cost of labor, material, overhead and net profit.....				$20.66

We also have a 16-inch and a 20-inch cold air which are marked in our list at $25.52 and $37.47, respectively.

From this you will see that the scientific installation of warm air heating systems has been thoroughly worked out. And in addition an effort has been made to assist the installer in learning how to work out a system whereby he will insure himself of getting all charges for materials and supplies into the selling price to the customer.

It is the candid opinion of many authorities in the warm air heating industry that price cutting by furnace installers is done not so much from a desire to beat the other fellow as from ignorance of what the true costs of the job are. Therefore, if the installer can be shown how he is losing money by taking a job at a price which does not include all of the items that go into that job, perhaps he must exercise care in computations.

NEWS ITEMS FROM THE FIELD

Warm Air Furnace Fan Company Holds Cleveland Lecture

The Warm Air Furnace Fan Company, Cleveland, held a lecture course in Toledo on January 15, 16 and 17. The course was given under the auspices of the Toledo Heating and Sheet Metal Contractors' Association. A similar course will be given in Philadelphia, January 22, 23 and 24, with the same program.

The idea behind the courses is to give contractors a short but complete course in warm air heating with emphasis on such developments as the use of fans to give uniform and increased circulation of warm air.

As given in Toledo, the course covered discussion of the British Thermal Heat Unit as applied to furnace work, explanation of the constant "K," heat loss calculations, Specific heat, weight of air, the factor "55," and method of calculating heat in air.

The second day's discussion covered air circulation with particular attention given to velocities of air and size of pipes and how the installation of a fan effects these variable factors. An interesting part of the second day's program disclosed results of tests of heat losses from single and double bright tin as compared with one, three and six coats of asbestos paper. Calculations of a typical room were made at the same time.

The final day's program covered combustion, combustion rate and standards, furnace efficiencies and capacities. Since factories and such businesses as garages are large, potential users of forced air heating, calculating heat losses for these structures was discussed at length. As a final problem the course took up a typical installation and designed a complete system, including calculation of furnace size, fan size, pipe size for trunk and branch lines, and how best to install the system.

The problem confronting warm air heating contractors today is to sell warm air heating, and the successful contractor must be well equipped technically to answer any or all questions on the prospect. The course is designed to give a short and easily understood analysis of the problems and correct application of the principles behind warm air heating.

New Excelsior "Ace" Furnace

The Excelsior Steel Furnace Company, 114 South Clinton Street, Chicago, has just put on the market a new furnace incorporating several unusual features. The improvement

The New Excelsior "Ace"

stressed by the manufacturer is the greatly increased heating capacity gained through enlargement and radical changes made in the heating surfaces.

The base is cast in one piece, deep moulded and pitched to the back to permit dampening ashes without floor muss. The Ace is equipped with full sized, triangular grate bars, operated by an upright shaker bar.

The dome is unlike any other on the market. It is cast in one piece, eliminating several feet of cement joint. The unusual design of the dome, coupled with the massive radiator, is said to provide an unusual amount of radiation. All of this prime heating surface is above the firepot.

The radiator is cast in two pieces with an interlocking joint. The design of the radiator permits air to circulate around and through it. The smoke outlet extends through the casing and a finishing ring is provided for attractive appearance.

The furnace follows today's trend toward the use of color and has a maroon enameled front of high gloss.

The company has issued an attractive catalog telling all about the new furnace. The catalog also shows their long established products. This catalog will be sent to any interested dealer.

Hall-Neal Change in Management

Harry W. Neal, for 28 years associated with Charles E. Hall in the ownership of the Hall-Neal Furnace Company, Indianapolis, has disposed of his stockholdings to Mr. Hall. Although Mr. Neal leaves active management in the furnace company, his association with Mr. Hall is to be continued.

Mr. Neal takes over the sale of the Victor furnace, manufactured by the Hall-Neal Company, in Marion County, Indiana. He will devote his time and energies to the sale of this furnace.

In sending in notice of the change Mr. Hall adds that Harry is not rich as wealth is counted these days, but his years of work have brought him comfort and freedom from financial worry. In the vernacular, Mr. Hall says, Harry is "sitting pretty."

The ARTISAN takes this opportunity to wish Mr. Neal the best of success in his new work.

Charles R. Hook Elected to Head Armco Organization

THE Board of Directors of the American Rolling Mill Company on Tuesday, January 7, voted to enlarge the executive staff of the corporation by creating the offices of chairman of the board and vice chairman, in addition to the existing positions.

George M. Verity, president of

George M. Verity

the company since its inception, was elected to the position of chairman, and Joseph H. Frantz, first vice president for the past 16 years, was named vice chairman.

To succeed Mr. Verity as president the board elected Charles R. Hook, who has been vice president and general manager for the past seven years. Mr. Hook as president will retain the duties of general manager.

Calvin Verity

In addition, Calvin Verity, who has been treasurer and assistant general manager, was named vice president and assistant general manager.

S. R. Rectanus, assistant to Calvin Verity, was made vice president in charge of operations.

C. W. Davis, assistant treasurer, was elected treasurer, a position held until today by Calvin Verity.

E. N. Millan, chief of construc-

Charles R. Hook

tion, was made chief engineer of the company.

The enlarged executive staff represents the complete adaptation by the company of the modern scheme of corporate organization, and both the chairman and the vice chairman will remain in active relationship for consultation and general direction of its policies.

George M. Verity has been identified with the company from its start. He was its chief promoter and organizer. Its great growth in the steel industry, today being the leading independent independent manufacturer of sheets, reflects the ability and foresightedness with which he has conducted the company's affairs in the 30 years of its existence. The company was formally organized in 1899 and the first board meeting was held January 5, 1900. At this meeting Mr. Verity was elected president and general manager. He has held the position of president ever since, but relinquished the position of general manager seven years ago, when Mr. Hook was elected to that position.

Mr. Hook, the new president, has been identified with the company for 28 years. In that time he has served in every managerial and executive position so that he assumes his new function with full training and experience in the business. Mr. Hook has achieved for himself a fine reputation in the sheet mill industry and in his work with the company he has shown unusual ability as an organizer and directing executive.

W. L. Fleisher with Richardson & Boynton Company

Recent announcement has been made of the appointment of Walter L. Fleisher as technical advisor to Richardson & Boynton Co. In this connection Mr. Fleisher will serve in an advisory capacity to the company for the further development of domestic heating and air conditioning.

Mr. Fleisher, one of the most widely known heating and ventilating engineers took his technical training at the University of Pennsylvania and then became associated with an engineering concern in Philadelphia, later serving as chief engineer and New York representative. In 1912 he organized the W. L. Fleisher Company, Inc., acting as president and chief engineer. In 1925 he sponsored another concern known as the Cooling and Air Conditioning Corporation, of which he served as vice president and chief engineer.

For many years Mr. Fleisher has played important parts in the activities of the American Society of Heating and Ventilating Engineers, the American Society of Mechanical Engineers and the American Society of Bakery Engineers. He has also many inventions to his credit, holding more than forty patents, of

which equipment for auditorium ventilation has been especially important.

As chairman of the Standardization Committee of the National Heating and Piping Contractor's Association, Mr. Fleisher has had very close practical connection with the trade. For several years he has served as president of the New York Chapter of the American Society of Heating and Ventilating Engineers. He began his services with Richardson & Boynton Company on January first.

Ralph Patten Leaves Standard Foundry & Furnace Company

Ralph S. Patten, for many years associated with the Standard Foundry & Furnace Company of De Kalb, Illinois, and prior to that with the Hero Furnace Company, has resigned from the Standard company, effective January 15, to enter the sales department of the Turner Brass Works, Sycamore, Illinois.

The change will come as a surprise to Ralph's numerous friends throughout the warm air heating industry, and the ARTISAN feels certain that the furnace industry has lost a valuable and progressive associate. The ARTISAN joins with Ralph's friends in wishing him the best of success in his new work.

New Inland "Gal-Van-Alloy" Steel Sheets On Market

The "Gal-Van-Alloy" steel sheet is a new product recently placed on the market by the Inland Steel Company. The coating on these sheets is completely alloyed with the base metal, there being no top layer of pure zinc as is the case with regular galvanized sheets. On this account Inland "Gal-Van-Alloy" sheets will withstand severe drawing or forming operations without peeling or flaking. This material will also stand considerable without flaking or cracking of the coating and is suitable when any paint or the present day popular high finish enamels and lacquers are to be applied.

The finished surface of a "Gal-Van-Alloy" sheet is considerably smoother and no trouble is encountered from peeling or cracking after painting, enameling or lacquering as is often the case with regular galvanized sheets. "Gal-Van-Alloy," the makers say, is especially well adapted to use for such purposes as stoves, oven linings, refrigerators, outdoor sign boards, steam tables, warm air furnace casings, steam pipe and furnace elbows, gasoline tanks and washing machines.

The sheets are dull gray in appearance and can be supplied in 16 to 30-gage inclusive. They are made in two grades, regular and special, the latter having a much smoother surface than the regular grade. They may also be had with an Inland Copper Alloy Steel base, which is recommended where maximum corrosion resisting qualities are desired.

Resigns as Head of Youngstown Sheet & Tube Company

James A. Campbell, president of the Youngstown Sheet and Tube Co., Youngstown, Ohio, recently presented his resignation, to become effective January 1, 1930. Mr. Campbell, however, will continue with the company as chairman of the board of directors, and will be in active charge of the company's affairs.

Frank Purnell, assistant president, and associated with the Youngstown Sheet and Tube Co. for twenty-seven years, was elected to the presidency, succeeding Mr. Campbell, by the board of directors. Mr. Purnell was assistant chief of the steel division on the war industry board during the war.

Minneapolis-Honeywell Company Increases Dividend Rate

The Board of Directors of the Minneapolis-Honeywell Regulator Co., Minneapolis, Minnesota, voted at its December meeting to increase the semi-annual dividend rate on the company's common stock from $1.25 a share to $1.50, and to continue the semi-annual extra dividend of 50 cents a share inaugurated in 1929. Dividends on this new basis were declared, both payable on February 15, 1930, to stockholders of record at the close of business February 4, 1930.

CORRECTION

In the list of trade names of warm air furnaces appearing in our 1930 Warm Air Furnace Annual the P. H. McGirl Foundry & Furnace Works, makers of the Gibraltar line, was incorrectly stated to be located in Quincy, Illinois. This company is located in Bloomington, Illinois and we ask that readers make this correction in their lists.

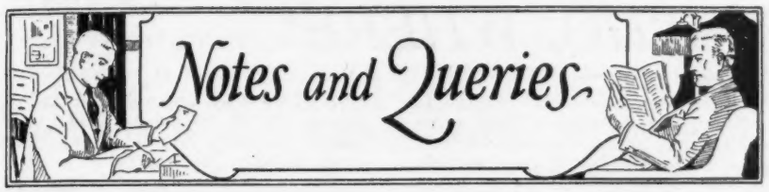
How to Make a Joint Between Standing Seam Roof and Valley

C. J. Kersten, Kersten's Tin Shop, Sheboygan, Wisconsin, has sent in a question concerning the best method and cheapest method of making a joint between a standing double seam galvanized iron roof and a valley joint.

We are publishing this to give other readers an opportunity to answer the question for Mr. Kersten. If you have had experience in this work, send it along.

Wisconsin Gets New Truck License Law

A new truck license law has recently gone into effect in Wisconsin. While automobile licenses will continue to be due on the first of the year, in the future trucks will be licensed as of June 30th. This new law was passed on the basis that many trucks earn no money during the winter when the license fee must be paid. The law changed the date to the end of June by which time the trucks will have had an opportunity to have earned the fee. The office of the Secretary of State is now issuing new trucks licenses for the half year to June 30th at half the regular fee.



Hygrometer

From C. J. Kersten, 1511 North Eighth Street, Sheboygan, Wisconsin.

Please tell me where I can buy a hygrometer for testing the moisture in the small house.

Ans.—E. Vernon Hill Company, 64 West Randolph Street, Chicago.

Hollow Punches

From Uradio Units Company, P. O. Box 84, Salt Lake City, Utah.

Where can I buy hollow punches, both circular and rectangular, with flare on the inside?

Ans.—Jos. T. Ryerson & Son, 2558 West 16th Street, Chicago.

Wicks for "Barler" Oil Heater

From Amana Society Tin Shop, Homestead, Iowa.

Kindly advise where we can secure wicks for the oil stove heater formerly made by the A. C. Barler Manufacturing Company of Chicago.

Ans.—Barler Heater Company, Goshen, Indiana.

Standard Ordinance for Chimney Construction

From Agricola Furnace Company, Inc., Gadsden, Alabama, and Gilt Edge Heating Company, 1976 Atwood Avenue, Madison, Wisconsin.

Where can we get copies of "A Standard Ordinance for Chimney Construction" as described in the December 28th issue of AMERICAN ARTISAN?

Ans.—The National Board of Fire Underwriters, 222 West Adams Street, Chicago.

"Allegheny" Metal

From The Glatt Company, 455 North Artesian Avenue, Chicago.

Can you tell us who makes "Allegheny" metal?

Ans.—Allegheny Steel Corporation, Pittsburgh, Pennsylvania. Chicago office—122 South Michigan Avenue.

Bicycle and Bicycle Supplies

From Chris Ehlinger, Vinton, Iowa.

Who manufactures bicycles?

Ans.—Mead Cycle Company, 166 North Clinton Street, Chicago, Illinois; Iver Johnson Arms & Cycle Company, Fitchburg, Massachusetts, and Toledo Metal Wheel Company, Toledo, Ohio.

Overhead Garage Door

From R. W. Tyler, 812 West McKinley, Blackwell, Oklahoma.

Please tell me who, besides Richards-Wilcox, makes an overhead garage door 10 feet high and 12 feet wide.

Ans.—Overhead Door Company, Hartford City, Indiana.

Steel Tubes

From L. R. Hamman, 507-511 East Prairie Avenue, Decatur, Illinois.

Where can I get No. 16 gauge 1 pass cold rolled steel tubes 2½ inches inside diameter and 40 inches long?

Ans.—C. A. Roberts Company, 22 Aberdeen Street, Chicago.

"American Beauty" Fireplaces

From Omaha Stove Repair Works, 1206-08 Douglas Street, Omaha, Nebraska.

Can you tell us who makes, or who can furnish repairs, for No. 358 "American Beauty" fireplaces?

Ans.—The manufacture of these fireplaces was discontinued about ten years ago, and as far as we know, there isn't anyone who can furnish repairs for them.

Tin Foil Tin

From Wendel Furnace & Sheet Metal Works, 246 First Street, Hinsdale, Illinois.

Please tell us where we can buy very thin tinfoil tin?

Ans.—The John J. Crooke Company, 1259 South Campbell Avenue; U. S. Foil Company, 5 North Wabash Avenue, and Lehmeier, Schwartz & Company, 180 North Wacker Drive; all of Chicago.

Furnace Chain

From Siemens Furnace Supply Company, 219 North Tenth Street, Quincy, Illinois.

Please inform us who manufactures warm air furnace chain?

Ans.—American Chain Company, Bridgeport, Connecticut; Cleveland Chain & Manufacturing Company, Cleveland, Ohio; Union Chain & Manufacturing Company, Cleveland, Ohio, and Wm. Woodhouse Chain Company, Edgely, Bucks County, Pennsylvania.

Copies of Standard Furnace Code

From Cole Manufacturing Company, 3218 South Western Avenue, Chicago.

We should like to know where we can get copies of the latest edition of the Standard Furnace Code.

Ans.—National Warm Air Heating association, 174 East Long Avenue, Columbus, Ohio.

Porstelain

From David H. Owen, 2306 Front Street, Meridian, Mississippi.

Can you tell me who makes Porstelain steel bathroom tile?

Ans.—Porcelain Tile Company, 228 North La Salle Street, Chicago.

Who Makes "Imperial" Cabinet Heater?

From The Huron Furnace Company, Huron, South Dakota.

Who makes the "Imperial" enameled cabinet parlor heater or circulator?

Submitted to our readers.

Iron Pipe

From Spencer Welding Works, East Fifth Street, Spencer, Iowa.

Where can we buy a No. 12 gauge iron pipe of a 6-inch diameter?

Ans.—Chicago Metal Manufacturing Company, 37th and Rockwell Streets, Chicago.

Automatic Gas Storage Water Heaters

From A. Conzelman, 122 South Vermillion Street, Streator, Illinois.

Kindly tell me who makes automatic gas storage water heaters.

Ans.—Ruud Manufacturing Company, 1223 South Wabash Avenue; Kellogg-Mackay Company, 1351 West 37th Place; Humphrey Company, 916 South Michigan Avenue; American Radiator Company, 910 South Michigan Avenue; all of Chicago.

Water Softeners

From A. Conzelman, 122 South Vermillion Street, Streator, Illinois.

Please advise who makes water softeners.

Ans.—International Filter Company, 337 West 25th Place, Chicago, Illinois; Graver Corporation, East Chicago, Indiana; Wm. B. Scaife & Sons, First National Bank Building, Pittsburgh, Pennsylvania; Stover Steel Tank & Manufacturing Company, Freeport, Illinois, and Zeolite Chemical Company, 140 Cedar Street, New York City.

WHO'S WHO, WHERE!

LOS ANGELES, CAL.—The American Metal Tile Co. has engaged in business at 120 East Eighth Street, under management of Harold Minter.

WHEELING, W. VA.—The Wheeling Corrugating Co. is reported planning the erection of a factory and warehouse in Des Moines, Ia.

BALTIMORE, MD.—The plant of the Federal Tin Co., corner Barre & Charles Streets, has been damaged by fire.

KANSAS CITY, MO.—The Kornbrodt Kornice Co., 1811 Troost Avenue, has been awarded the sheet metal work, and the Acme Fireproof Door Co., 2130 Washington Street, the tin clad door contract for $5,400,000 building for Interurban Central Station Co. in that city.

SHREVEPORT, LA.—The H. H. Bain Sheet Metal Works, 808 Reynolds Street, has the sheet metal, roofing and waterproofing contract for the W. A. McCartney Hotel in Texarkana, Tex., and the tin-clad. The kalamein door contract went to Hansen-Macgruder, Inc., Dallas, Tex.

LOS ANGELES, CAL.—The Main Cornice Works, Inc., Los Angeles, Cal., has moved its office and plant to larger quarters at 1416-18 N. Main Street.

LOS ANGELES, CAL.—The Main Cornice Works has been awarded the sheet metal contract for factory building of Whittier Ice Cream Co., in Whittier, Cal.

LOS ANGELES, CAL.—The Hayes Furnace Co. has been awarded the heating contracts for shop building of J. F. Bolster Co. and nine dwellings of Wm. W. Lemmon in Pasadena, Cal.

BEVERLY HILLS, CAL.—J. B. Cobb has been awarded the sheet metal contract for apartment building of E. W. Love.

LOS ANGELES, CAL.—The Payne Furnace Co. has the heating contract for apartment building of Moses Fereday, in Beverly Hills and the residence of De Moulin Corp., in Los Angeles.

SEATTLE, WASH.—The Independent Sheet Metal Company, 1723 Westlake Avenue, has the sheet metal and roofing contract for Russak and Nelson warehouse.

MINNEAPOLIS, MINN.—The Midwest Roofing and Sheet Metal Company has engaged in business at 929 South Fifth Street, Minneapolis, under the management of Edward Raymond and A. E. Chalker.

MANKATO, MINN.—The Nelson & Skalisky tin shop, 614 Nicollet avenue, has been damaged by fire.

SUPERIOR, WIS.—The Holmes Brothers Company has been awarded the sheet metal contract for the Geo. W. Newton Company store building.

EAU CLAIRE, WIS.—The Hoveland Sheet Metal Works, 324 Bellinger Street, has been awarded the furnace heating contract for residence of Olsen and Walker.

OAKLAND, CAL.—The M. C. Henry Company, 1183 53rd Street, has the sheet metal work for S. E. McCormick residence.

WAUPACA, WIS.—The Schwarzkopf Sheet Metal Works, Waupaca, Wisconsin, has the heating contract for the residence built by Jenson & Rasmus, contractors.

LANSING, MICH.—Joseph M. Smith, manufacturer and dealer in heat regulating systems, has incorporated his business as the Smith Heat & Pressure Systems, Inc., with headquarters at 214 S. Washington Avenue.

SAN FRANCISCO, CAL.—The Forderer Cornice Works, 269 Potrero Avenue, was the low bidder for sheet metal work on the San Jose Community Hotel, at San Jose, Cal.

MONTEREY, CAL.—The Barton Oil-O-Matic Company has been awarded the sheet metal work contract for the Monterey Trust & Savings Co. building in Carmel, Cal.

PT. ANGELES, WASH.—The Majestic Furnace & Manufacturing Co., 1723 W. Lake Avenue N., has been given the heating contract for residence of George and Oscar Kuppler.

BURLINGTON, IA.—The Strang Engineering Service has been incorporated with a capital of $25,000, and will handle heating devices. The incorporators are Walter A. Stang, Hilton A. Stang and Ray E. Stang.

MANKATO, MINN.—The Hagen Hardware Co. has the roofing and sheet metal contract for hotel building in Chatfield, Minn.

MADISON, WIS.—Reinick & Kreuger Company, 106 N. Frances Street, has the sheet metal contract for ice cream factory of Mansfield-Caughey Company.

LOS ANGELES, CAL.—E. F. Koch has the sheet metal contract for Academic Building at the San Diego State Teachers College, San Diego, Cal.

PASADENA, CAL.—The Betz Sheet Metal Works has the heating contract for the R. J. Ustic apartment building in South Pasadena.

GADSDEN, ALA.—The Agricola Furnace Co., manufacturer of house heating furnaces, has let the contract for an addition to its foundry and also its sheet metal department, to increase capacity about 60 per cent.

BATON ROUGE, LA.—The Holzer Sheet Metal Works, Inc., 321 Burgundy Street, has the sheet metal contract for the Governor's Mansion.

Indiana Sheet Metal and Warm Air Heating Contractors' Association, Hotel Denison, Indianapolis, January 21, 22 and 23, 1930. Paul R. Jordan, 631 South Delaware Street, Indianapolis, Executive Secretary.

American Society of Heating & Ventilating Engineers and International Heating and Ventilating Exposition, Philadelphia, January 27 to 31, 1930. A. V. Hutchison, 29 West 39th Street, New York, Secretary.

Missouri Retail Hardware Association Convention and Exhibition, New Hotel Jefferson, St. Louis, January 28, 29 and 30, 1930. F. X. Zecherer, Secretary, 5106 North Broadway, St. Louis.

Indiana Retail Hardware Association Convention, Manufacturers' Building, Indiana State Fair grounds, Indianapolis, January 28, 29, 30 and 31, 1930. G. F. Sheely, Secretary, 911-913 Meyer Kiser Bank Building, Indianapolis.

Wisconsin Sheet Metal Contractors' Association, Hotel Schroeder, Milwaukee, February 3 and 4, 1930. W. A. Belau, 317 McKinley Avenue, Milwaukee, Wisconsin, Secretary.

National Association of Sheet Metal Contractors, Fort Pitt Hotel, Pittsburgh, Pennsylvania, June 10 to 13, 1930. W. C. Markle, 336 Fourth Avenue, Pittsburgh, Secretary.

Wisconsin Retail Hardware Association Convention and Exhibition, Auditorium, Milwaukee, February 4, 5, 6 and 7, 1930. B. Christianson, Secretary, Stevens Point. G. W. Kornely, Exhibit Manager, 1476 Green Bay Ave., Milwaukee.

Ohio Hardware Association convention and exhibit, Columbus, February 4, 5, 6 and 7, 1930. The exhibit will be in the new Columbus Auditorium. James B. Carson, Secretary, 315 Mutual Home Building, Dayton.

Illinois Retail Hardware Association Convention and Exhibition, Hotel Sherman, Chicago, February 11, 12 and 13, 1930. Paul M. Mulliken, Managing Director, Elgin.

Pennsylvania and Atlantic Seaboard Hardware Association, Atlantic City, New Jersey, February 11 to 14, 1930. Sharon E. Jones, Secretary-Treasurer, Wesley Building, 17th and Arch Streets, Philadelphia.

Pennsylvania Sheet Metal Contractors' Association, General Broadhead Hotel, Beaver Falls, Pennsylvania, February 18 to 20, 1930. Secretary, M. F. Liebermann, 1411 Merchant Street, Ambridge, Pennsylvania.

Ohio Sheet Metal Contractors' Association, Toledo, Ohio, February 18 to 20, Secor Hotel, Toledo, Ohio. Secretary, J. M. Saunders, East 22nd Street and Prospect Avenue, Cleveland, Ohio.

The Michigan Retail Hardware Association Convention and Exhibition, Grand Rapids, Michigan, February 18 to 21, 1930. Hotel Pantlind will be headquarters and the exhibition will be at the Klingman Exhibition Building. A. J. Scott, Secretary, Marine City.

Michigan Sheet Metal and Roofing Contractors Association Convention, Detroit, March 3, 4, 5 and 6, 1930. D. H. Ederle, Assistant Secretary, Grand Rapids, Mich.

Minnesota Retail Hardware Association, Minneapolis, February 18, 19, 20 and 21, 1930. Charles H. Casey, Manager, 2344 Nicollet Avenue, Minneapolis.

Iowa Retail Hardware Association Convention and Exhibition, Hotel Savery and Des Moines Coliseum, Des Moines, February 11, 12, 13 and 14, 1930. A. R. Sale, Secretary, Mason City.

Illinois Sheet Metal Contractors' Association, Hotel St. Nicholas, Springfield, Illinois, April 8, 9, 10, 1930. Charles L. Radtke, 1049 East 8th Street, La Salle, Illinois, Secretary.

National Warm Air Heating Association, Detroit, Mich., April 15, 16, 1930. A. W. Williams, 174 E. Long Street, Columbus, Ohio, Managing Director.

OVERHEAD EXPENSE

(*Concluded from Page* 30)

able tendency to lower his standard and with it the standard of his competitors. The safe way is never to take any job even during a period of business depression that does not carry at least enough margin to cover the overhead expense and to do that only in a limited number of cases.

Therefore the answer to the question is, It is only good business practice when you know just exactly what you are doing and how far you can go.

Should Good Clients Pay for the Poor Ones?

Now and then a man comes along who is conscious in his attitude toward his business and the customer's pocketbook who reasons that it does not seem fair to him that he should charge his business losses up against his overhead expense; in other words make the good customer pay for the poor one.

In answer let us first give these rare individuals full credit for their conscientiousness, but let us also say that if they feel that in taking on the bad customer they made a mistake for which they themselves should pay that is all right with us. That is their own affair.

It is a practice, however, that they are likely to find bad for their credit and bad for their families. Every business has a certain number of bad bills. It is a natural business expense and should of right be charged up against the business which in turn occasions it. That is fair and a good business principle. When you buy a hat or a pair of shoes you pay your little part of the bill that the other fellow did not pay. When you pay your bill for sheet metal supplies or furnaces you pay your little share of the fellow's bill who forgot. Legitimate business losses are legitimately chargeable to the overhead expense of that business.

Overhead Figured on Labor (Productive)

There are some men who advocate estimating the overhead on labor cost as being the proper method. To which the reply is that it makes absolutely no difference at all how you make the application, so far as covering your overhead is concerned. But you must use the proper percentages and the proper proportions, which differ in each case. You can load your overhead on the labor, on materials or the gross cost can be made to carry the overhead just as correctly as you can place it on the amount of business done or the sales price. It simply means a more involved operation than the one which has been outlined without any compensating advantage as far as I can see.

Now, of course, it may be desirable for obvious reasons to bury this overhead item in one manner or another. This is not difficult to do once the correct amount of overhead has been determined. The all-important thing is to find out what your actual overhead expense is. The burying it takes us out of the bounds of this article into another phase of cost accounting.

A New Wrinkle in Collecting Delinquent Accounts

Merchants of San Francisco have hit upon a new plan of collecting bad accounts. Believing that the old way of dunning and hounding a delinquent to death creates more ill will than is warranted by the amount of money collected, these men have determined to work out a more efficient method of not only collecting money due them but retaining the good will of the customer at the same time.

The plan adopted works as follows: The retail merchants have banded together and have appointed an arbiter. The job of this man is to call upon the delinquent, find out why payments have stopped, win his confidence if possible and get the debtor to agree to pay a certain portion of his salary to the office of the arbiter every week until the debt is paid; that is, the arbiter appears before the debtor not as a bill collector, but as a financial counselor. He agrees to stop the debtor from being annoyed with duns and threats in exchange for a definite weekly payment. The payment is arranged in accordance with the debtor's ability to pay as determined by his financial standing and earning capacity.

In this way expensive law suits and repeated duns and threatening letters are avoided, potential bill jumpers are made to realize their obligation and endeavor to discharge them. Best of all the store does not lose a customer, because there is no enmity or hard feelings between merchant and customer.

These San Francisco merchants have found their method to be working out in fine shape. The merit of this type of procedure is unquestioned and would prove a value in the warm air heating industry.

Central Alloy Steel in Big Steel Merger

Merger of the Republic Iron & Steel Company, Central Alloy Steel Corporation, Donner Steel Company and Bourne-Fuller Company, forming the third largest iron and steel enterprise of the country, was effected at Cleveland, Ohio, December 17.

The name of the merged companies probably will be the Republic Steel Company. Its total assets will be approximately $350,000,000, its annual net sales about $250,000,000, and its annual steel ingot capacity about 4,900,000 tons.

T. M. Girdler, until a few months ago president of the Jones & Laughlin Steel Corporation, is to be chairman of the board of the merged companies. E. T. McCleary, president of the Republic company, will be president. F. J. Griffiths, chairman of the Central Alloy corporation, is to be president of the Republic Research Company, which will be formed to take charge of all research and metallurgical work.

The merger, approved by the boards of the various companies and to be submitted at an early date to stockholders, brings together a number of iron and steel interests in which the Otis-Eaton-Mather group are heavily interested. Reports of

ASSOCIATION ACTIVITIES

Indiana Sheet Metal and Warm Air Heating Contractors' Association Convention

The program for the coming convention of the Indiana Sheet Metal and Warm Air Heating Contractors' Association will present a somewhat more varied line of addresses than these programs have customarily embraced. The address by E. A. Scott, "New Ideas, Their Cost and Worth," will cover a subject which is of constant and vital importance to every operator of a sheet metal or furnace shop. The subject is one which has seldom, if ever, been placed before the Indiana contractors. The mere intimation of new ideas costing something opens up a field for discussion, and the fact that new ideas are worth something, while generally accepted, has seldom been balanced against the fact that new ideas cost something.

Professor Hoffman of Purdue University, who has talked to former conventions about the Standard Code, has consented to come before the convention again with more recent developments.

The book which the National Sheet Metal Contractors' Association has published after years of preparation is in itself an advent worthy of a full day on the program. It will give Mr. Markle, National Secretary, a good subject for a talk and it is expected that, even in the short time available, he will be able to so recommend the volume as to stimulate uniform distribution among the Indiana trade.

The Copper and Brass Research Association have been prevailed upon to lay before the membership some of the distinctive advantages peculiar to copper as a building material. Contractors realize that copper has many virtues, but a wider and more definite knowledge of its advantages as a building material is bound to help the sheet metal contractor and, if rightly used, will increase his profits. Mr. Leimkuehler of St. Louis will represent the association.

The Association has for the past two years offered its membership the advantage of placing all types of insurance, excepting life insurance, through its office. This includes fire, compensation, liability, plate glass, burglary, automobile, etc. Through this plan the membership has saved from 20 to 50 per cent on its insurance outlay. C. F. Stothard, representative of the Hardware Insurance Companies, is going to tell the convention how these savings are made possible without sacrificing security.

Jack Stowell, special representative of the Better Business Committee of the National Warm Air Heating Association, has appeared before the convention in former years, but it having become known that he had certain new information of a definite character applying to business getting and money making as well as proper installation, the program committee has asked him to give the Indiana trade the benefit of this latest information. If his former appearance is a criterion, Jack will give the heating contractors all they can possibly assimilate.

The appearance on the program of C. A. Radford, department manager of the Big Four Railroad, who will come up from Cincinnati to talk to the convention about the effect of railroad policies on general business conditions, is quite an innovation for a program of this kind. His fund of unusual information along this line will be both interesting and entertaining to the Indiana contractors.

The value of fans in connection with warm air heating has been quite widely discussed, but never before the Indiana contractors. E. C. Carter, the fellow who can take any subject, old or new, and give a different angle to it with orininal ideas supported by facts and figures, will be the speaker on the fan problem.

It is not often that a state convention can boast on its program two national presidents; however both President Merrick of the National Sheet Metal Contractors' Association and President Triggs of the National Warm Air Heating Association have definitely promised to talk to the convention.

Ladies Auxiliary Meeting, Sheet Metal and Roofing Contractors Assn. of Kentucky

On Thursday evening, January 16, the Ladies Auxiliary of the Kentucky Sheet Metal and Roofing Contractors Association held their annual dinner and installation service in honor of the newly elected officers.

As a part of the meeting the new publication, "Standard Practice in Sheet Metal Work" was read and discussed by members. The association is giving a copy of the book to the Ahrens Trade School.

The Newly elected Officers of the Ladies Auxiliary for the year 1930 are as follows:

President, Mrs. Ray Schott, 1318 Story Avenue.

First Vice President—Mrs. John V. Kemper, 2152 Gladstone Avenue.

Second Vice President — Mrs. John P. Heckel, 1000 E. St. Catherine.

Scribe—Miss Marcella Harpring, 503 Camp Street.

Assistant Scribe — Mrs. Wm. Mehler, 1317 Rufer Avenue.

Treasurer—Miss Dorothy Harpring, 503 Camp Street.

Chaplain—Miss Georgia Merrick, 800 E. Madison.

Guard—Mrs. Chas. W. Schott, 1316 Story Avenue.

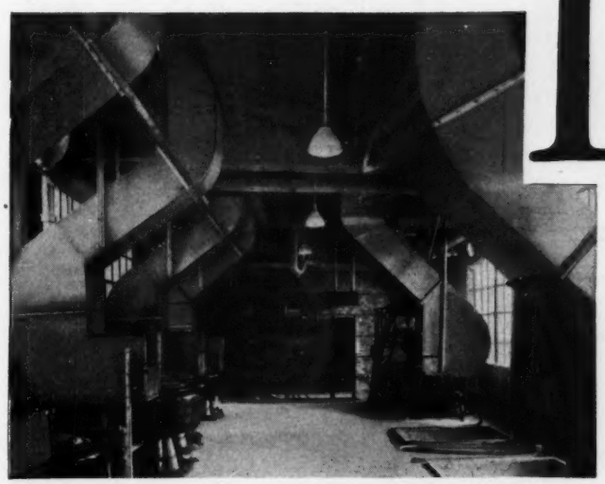
Reporter, Mrs. E. T. Welsh, 2816 Hoock Avenue.

All the new officials reside in Louisville.

Certainly...

there is Monel Metal business in the

Laundries



Interior view of extractor room, Excelsior Laundry Co., Cincinnati, Ohio, showing Monel Metal chutes fabricated by KIRK & BLUM MFG. COMPANY.

Are you going after these extra profits in 1930?

HAVE you ever visited a laundry? Until you do, you cannot know how profitable such a call will be.

Laundries need many items of equipment that you are able to supply. Chutes, for instance. When made of Monel Metal, they safeguard the wash against spots and stains. They will not rust, they speed up laundry operation.

Laundries must have trucks to transport wet and dry clothes from place to place. They use starch tubs, utensils, sorting table tops... and a host of other things that you can readily fabricate of Monel Metal.

Monel Metal, in nearly fifteen years of laundry service, has proved that its smooth, silvery surface is the best assurance of wash protection and economical laundry operation.

Why not start your own laundry effort today? Call on the laundries and point out how Monel Metal equipment will save them money. You will discover that laundry orders come easily, and that the increased profits will be an ample reward for your effort. Let us send more information about selling the laundries.

Write for new sheet metal literature and "Laundryowners' Year Book"

Monel Metal trucks used by Peerless Laundry, Los Angeles, Cal. supplied by KUNKEL STAMPING & MFG. COMPANY.

MONEL METAL

Monel Metal is a technically controlled Nickel-Copper alloy of high Nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

INCO MONEL METAL TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

J. M. & L. A. Osborn Company Harmony Club Annual Meeting

The Harmony Club of the J. M. and L. A. Osborn Company, Cleveland, will hold their seventeenth annual meeting on January 8, 9, and 10. The Harmony Club is composed of the company salesmen and other officials.

Each year a program is designed to give salesmen and officials a broad idea of what is going on in the field. The subjects cover both direct interest and indirect interest subjects.

In addition to discussions of topics relating to developments within the company's plant and personnel the following subjects will be taken up during the meeting.

"Aluminum Sheets," by R. J. Anderson, Vice President, Fairmont Manufacturing Company.

"Black and Decker Products," by T. H. Belling, Assistant General Manager, The Black and Decker Company.

"The Niagara Line," by Frank Reed and G. R. Kinney, Niagara Machine and Tool Works.

"Minster Presses," by J. F. Herkenhoff, the Minster Machine Company.

"Armco," by G. W. Breiel, American Rolling Mill Company.

"Superior Products," by H. A. Roemer, President, Continental Steel Corporation.

A theatre party will be given on the evening of the 9th.

Convention of the Master Sheet Metal Contractors Association of Wisconsin

Sheet metal contractors of Wisconsin will hold their annual convention February 3 and 4 in the Hotel Schroeder, Milwaukee. All contractors in the state and interested outside-of-the-state men are cordially invited to attend.

The two-day program will be filled with interesting discussions lead by authorities on the subjects. The first morning session will be given over to reports of standing committees and the appointment of new committees.

The first paper on the afternoon session will be "New Developments in the Furnace Industry," by George Harms. Earnest Szekely, Chief Engineer, Bayley Blower Company, will discuss "Application of Sheet Metal Work in Ventilation and Air Conditioning."

The first paper scheduled for the second day is "Value of Organization," by Phillip Grau. This will be followed by "Extension of Credit," by R. S. Shannon of the Milwaukee Chamber of Commerce. In the afternoon the Armco Distributors Association will show their film portraying the continuous method of rolling sheets. This will be followed by a round table discussion of Roofing, Ventilating, Sheet Metal Cornice, Blow Pipe and Furnace work.

Members and their ladies will have a theater party on the evening of the 3rd following a meeting of the ladies in the afternoon. A banquet will be given on the evening of the 4th with admission by reserved ticket.

Stag Dinner Held By Rhodes Mfg. Co., Grand Rapids

On January 13th the Rhodes Manufacturing Company, 350 Division Avenue, S., Grand Rapids, Michigan, held its second annual stag dinner to associate dealers. Some fifty men were present during the event, which was held in the offices of the company.

Anyone who knows Harry Rhodes—and who in Michigan does not?—also knows that any party which he graces as toastmaster is bound to be a success. And this one surely was just that.

Milwaukee Master Sheet Metal Contractors' Association Meet

The Master Sheet Metal Contractors of Milwaukee held their first meeting of 1930 on January 8 in the Elks Club. C. C. Tolg and I. F. Goerke, state president and vice-president, respectively, were guests of the association.

The Milwaukee association is working on a revision of the City Code. Some progress has been made but a larger committee was appointed to expedite the work of revision.

Wisconsin is engaged in revising the State Building Code and the sheet metal men of Milwaukee have requested the Wisconsin Industrial Commission to permit the building trades to offer constructive criticism of the work now in progress.

At the meeting a new set of officers was elected as follows:

Henry Pluckhan, president.

R. Klubertanz, vice-president.

A. Schumann, second vice-president.

C. Beernick, secretary.

F. Ward, treasurer.

E. Paradowski, sergeant-at-arms.

St. Louis Protective Ass'n Holds Annual Dinner and Dance

The Sheet Metal Contractors' Association and the Sheet Metal Consumers' Protective Association of St. Louis, Missouri, held its annual banquet at the Coronado Hotel, St. Louis, January 11. The entertainment consisted of snappy music, singing and dancing.

Who Did You Say the Owner Is?

Suppose you had given an estimate and you promised to do the work in a hurry—right away—to get the job, then suddenly wondered whether the prospect owned the property or was financially responsible to meet the bill and how soon would he pay it?

How much would you give right then to be sure you would not lose the money? Five or even ten dollars, wouldn't you?

Be sure you're right—then go ahead.

Five minutes' time and a telephone call saves one of our members $150 and at the same time some one who did not know lost $150.

The prospect may tell you he owns the property but—does he? Or, is it in his name as well as his wife's or someone else. A short time ago just that thing happened.

Uniform Open-Hearth Sheets --- the Result of Time, Talent, and Research

LONG experience, mature skill in steel making . . . sharpened by diligent and continuous research . . . guarantee that the thousandth Inland Open-Hearth Steel Sheet you buy will be exactly like the first. Every Inland Sheet, of a given kind, has the same characteristics . . . the same workability, assuring that production costs will be uniform . . . and has the same durability, protecting your customer-goodwill.

Inland Sheet Steel Products include sheets of many grades, each having certain qualities to meet specific requirements. For example, Inland Copper-Alloy Steel Sheets are used where resistance to rust and corrosion is the aim . . . Inland Gal-Van-Alloy Steel Sheets where flaking or finishing are problems . . . Inland Locker Stock where exceptional flatness is required . . . and Inland Windmill Stock for stiffness.

We are ready at all times to help you select the Inland Open-Hearth Sheet exactly meeting your particular needs.

Save with Steel

INLAND OPEN-HEARTH STEEL

INLAND STEEL COMPANY

ABLE SERVANT OF THE CENTRAL WEST

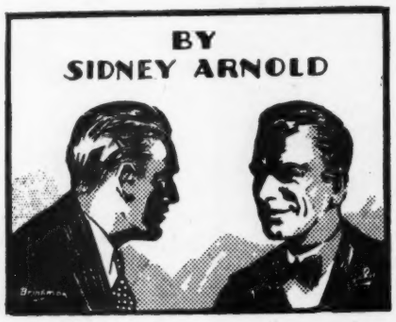
Sheets
Bars
Structurals
Plates

Rivets
Track Accessories
Rails
Billets

38 SOUTH DEARBORN STREET, CHICAGO

(A-176)

RANDOM NOTES AND SKETCHES



C. R. Lander, a veteran in the warm air heating game and field engineer with the Lakeside Company, Hermansville, Michigan, makers of the new fusible blower for warm air furnaces, dropped in to say hello recently.

He had just completed a trip through Iowa and Ohio which brought him in contact with manufacturers and jobbers of warm air furnaces and supplies.

He reports renewed activity and an enthusiastic optimism on the part of trade for increased business this year.

* * *

Perhaps it was mean of the gentleman below who started the conversation about married life. It's one of those jokes, by the way, that you shouldn't tell your wife. She might not understand. It goes:

Two men, who had been married at about the same time, met after some months. One asked the other how he liked married life.

"Fine," was the reply. "My wife's an angel."

"You always did have all the luck," said the first. "I still have mine."

* * *

"Imagine my embarrassment," said Dumb Dora, "when, according to my usual custom I looked under the bed before retiring. I had forgotten that I was in an upper berth."

* * *

A. W. Glessner, President, Excelsior Steel Furnace Company, Chicago, has fled the winter season in Chicago and will spend the next two months basking in the sun at St. Petersburg, Florida. Either Mr. Glessner is becoming quite a globe trotter or else he expects to begin a sales campaign among the natives of the Seminole state. Well, as we write this notice the snow is falling and the weather is darned cold so we are very much in favor of more and better sales campaigns in the south.

* * *

Listening In

Vacuum cleaners and carpet sweepers are all right, says E. B. Langenberg, but the average woman gets more dirt over the telephone.

* * *

Optimists come and optimists go but Frank S. Mehrings, General Manager, Meyer Furnace Company, Peoria, remains an optimist always. He dropped into the office last week and from his reports the furnace business should look for an active and prosperous year during 1930. We know that he just completed his sales conference last week, so he should be close to what is going on around this part of the country. The effects of active optimism are still with us. More such effort will go a long ways to boost business.

* * *

C. D. Schaffer, who formerly operated a general sheet metal shop with his father J. A. Schaffer in Fort Dodge, Iowa, stopped in the office the other day. We believe this is the first time we have had the pleasure of seeing him since the Iowa Sheet Metal Men's convention in Fort Dodge four or five years ago. Mr. Schaffer is now working in Chicago.

* * *

Mr. R. Satterholm of the Superior Heating Appliance Company, Chicago, was another recent visitor. Mr. Satterholm is very optimistic regarding the future of the gas burning warm air furnace.

* * *

C. L. Bailey of the Chicago office of the Central Alloy Steel Corporation, Massillon, Ohio, believes that business will be good during 1930. He reports that the sheet steel outlook is favorable and that the use of newer materials is gaining widespread usage.

* * *

Immanuel, the Brave Toreador: "Ah, Senorita, tonight I will steal beneath your balcony and sing you a sweet serenade."

Consuello, the Beautiful Senorita: "Oo. And I will drop you a flower."

Immanuel: "Ah, in a moment of mad love?"

Consuello: "No, in a pot."

* * *

We do not wish to appear unfair to the fair sex. Therefore, we include this one in which the lady seems to have the best of it:

He: "Didn't some brainless fool propose to you before we were married?"

She: "Yes."

He: "I wish to goodness you'd married him."

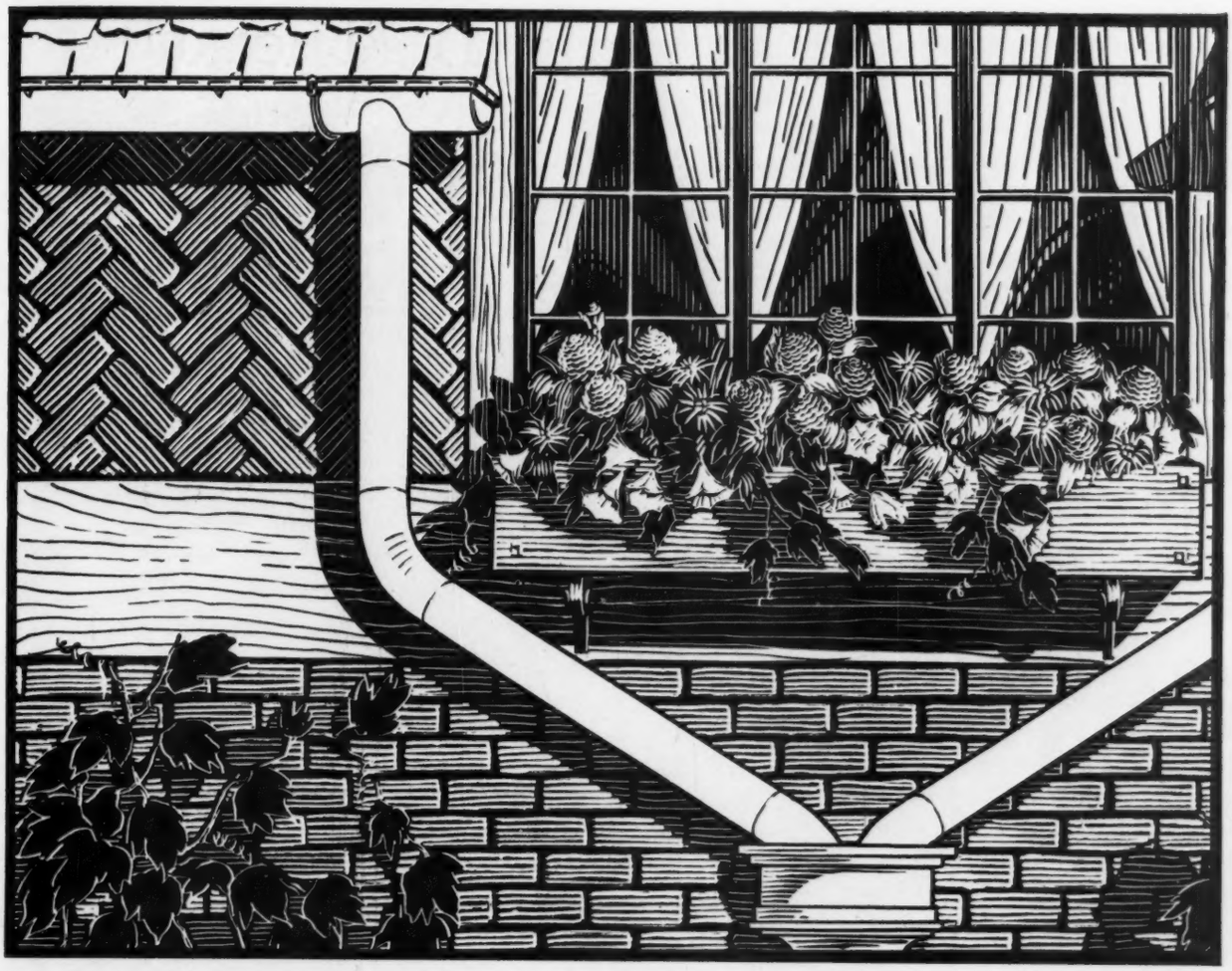
She: "I did."

* * *

Over-Advertised

Suave Auto Salesman: "It runs so smoothly you can't feel it, so quietly you can't hear it, has such perfect ignition you can't smell it, and as for speed—you can't see it."

Londoner: "My word! How do you know the bally thing is there?"



A PIPE-DREAM COME TRUE . . . LUPTON ELBOWS

HOW many times you've been in some cramped corner on a job, trying to get a cranky elbow to fit! Trying to solder it at the same time. Those were moments when you dreamed of an ideal elbow, one that would fit to a hair's breadth, one that needed no solder.

Step up, folks, and see the Lupton Elbow. It's got everything you ever wanted an elbow to have. Each is standard in size and shape. Each has a 2½-inch graduated taper which permits an instant water-tight joint, *without the use of solder.*

Lupton Elbows are known from coast to coast as quality products. They'll save you precious time and labor. They'll cut down the complaints from customers, and build up your name in the neighborhood. Try them on your next job. See your jobber. David Lupton's Sons Co., Allegheny Avenue and Tulip Street, Philadelphia, Pa.

LUPTON ELBOWS

Prices Soft, But May Be Checked

Producers Believe Increasing Confidence in 1930 Will Help Stabilize—Operations Up in All Districts—Auto and Railroad Needs Best

A FURTHER moderate increase in demand for finished steel has greatly stimulated competition among producers and has unsettled prices, especially on sheets, strip and wire. Concessions, which have been sharpest to the automotive industry, are believed, however, to have run their course, and efforts to stabilize are strengthened by the growing conviction in the industry that, as 1930 develops, its iron and steel requirements will closely match those of 1929.

Expanding operations of early January, following the December decline in steelmaking rates to the lowest level for any month in about five years, give indication that steel output reached its low point last month. In a normal year output expands during January, February and March.

While 1930 may not be a fully normal year, all signs point to a healthy revival in general industrial activity and marked improvement in the steel business compared with the last quarter of 1929.

Average daily output of steel ingots in December dropped to 115,851 tons compared with 135,116 tons in the previous month and 160,728 tons in December, 1928. This was a decline of 14.2 per cent for December following the 19 per cent November drop. It was 40 per cent below the March peak.

Pig Iron

Further improvement in activity at Pittsburgh is noted in the pig iron market, but the increase in new buying is confined mainly to small orders for prompt shipment.

Furnaces are failing to accumulate substantial backlogs, though some tonnages have been booked over the entire quarter. Low level of consumers' stocks is causing a steady run of spot purchases, up to 100 tons at a time, but the increase in consumption since January 1 is moderate.

Open market inquiry continues light. Pig iron prices are unchanged, though there is little business to test the basic market.

Shipments of pig iron from Chicago in January indicate a gain of about 25 per cent over the total for December.

A block of steelworks iron comprising foundry grades, and also some boat iron at dock has been sold in Chicago, Milwaukee, western Michigan and territory west of here at various concessions under the base Chicago price, which is $20.

The Marmon Motor Car Company is inquiring for 3,000 to 5,000 tons of foundry and malleable iron for Indianapolis.

Pig iron sales are in small lots at Birmingham, but purchasing is more frequent. Furnace interests are maintaining $15, base, for No. 2 foundry. The melt in this territory has been improving.

Non-ferrous Metals

Buying of non-ferrous metals was more active in the past week after an unusually long quiet period. Copper and zinc sales were moderately active in the domestic market.

The aluminum market appears a little more active. Prices are firm and unchanged, with an outlook for remaining so. Similar conditions prevail in nickel.

New buying of brass and copper products is showing a gradual pickup. Not many large orders have been placed, but users are coming into the market for many prompt shipments. Some copper wire orders extend into the future on deliveries but most of them are for early requirements.

Copper

The electrical industry was the chief buyer of copper this week, but brass mills also were purchasers. Export sales were fairly regular every day, close to last year's average business.

Copper sales for the week were not actually big, but were larger than in many weeks past. Casting copper and scrap prices moved up a little, while electrolytic remained on the 18.00c level. Total stocks of refined copper in hands of producers in North and South America increased 44,401 tons during December to 171,320 tons, the largest in about seven years. Average daily rate of production was 4,458 tons, a decline of 388 tons from the November rate and the lightest since July, 1928.

Zinc

Galvanizers have bought a good amount of prime western zinc at various prices from 5.40c to 5.20c, East St. Louis.

At the lower level resistance again has been shown, but it is too early to tell whether it is permanent or momentary. The price is down to the point where it is encouraging output curtailment. Rumors have it that several smelters now are cutting operations.

Tin

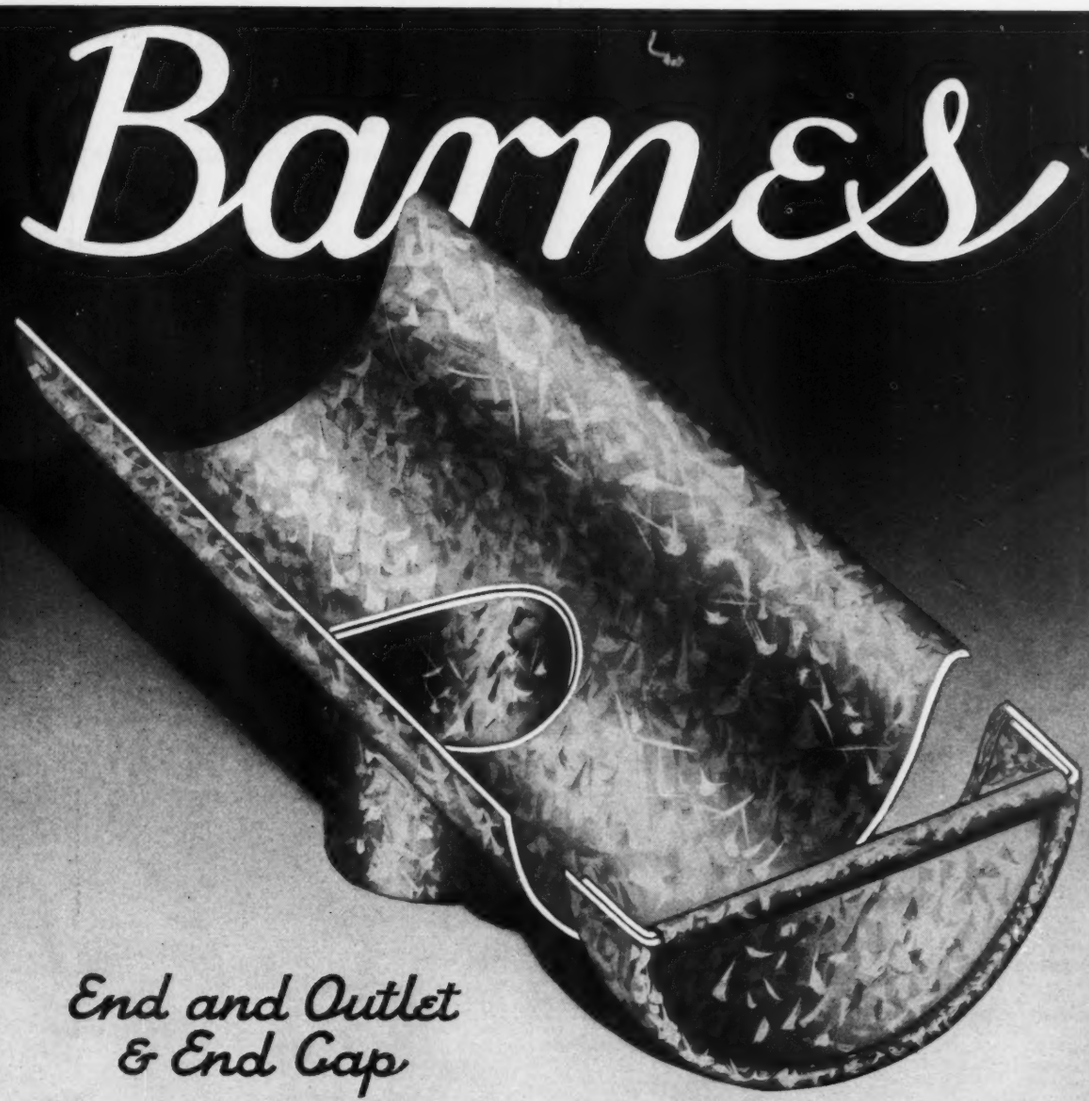
This market has been fluctuating around 39.00c for a number of weeks. The general trend was reactionary in the past week, with prices dropping lower.

The market has passed through a period of severe trial without any marked change in price levels. From now on, consumption probably will increase, and so the present action of the market is interpreted by some students to mean that quotations are likely to be firm at least in the early future. The immediate situation remains unbalanced on the side of supplies.

Lead

Demand for this metal continues to be the most regularly active of the entire nonferrous group. Producers are well sold for January shipment, and it appears as if consumers still have much to buy for February. The market seems to be in a very firm position.

Barnes



End and Outlet & End Cap

THE "Self-draining" end and outlet with end cap. Drop is seamed into place—no raw edges, no lap seams at the outlet connection. Accurate and correctly tapered to fit the pipe—easily assembled. The end cap has semi-circular bead and stiffening rib, a lock seam that requires no solder, a slip connection that fits quickly and securely on the end piece.

Use Barnes Products to Build Better Business

BARNES METAL PRODUCTS COMPANY
4425 W. 16TH STREET CHICAGO, ILLINOIS
MANUFACTURERS OF CONDUCTOR PIPE, ELBOWS, EAVES TROUGH AND FITTINGS. ALL SIZES, ALL METALS

UNDENIABLE PROGRESS

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly

Note: These Prices Are Chicago Warehouse Prices of Metal, to Which Must Be Added Freight to Cities Outside of Chicago

METALS

PIG IRON

Chicago Fdy., No. 2 ..... $20 00
Southern Fdy. No. 2 ..... 21 51
Lake Superior Charcoal 27 04
Malleable 20 00

FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC 20x28 112 sheets... $22 50
IX 20x28 ..... 25 50
IXX 20x28 56 sheets.... 14 50
IXXX 20x28 ..... 15 50
IXXXX 20x28 ..... 17 00

TERNE PLATES

	Per Box
IC 20x28, 40-lb. 112 sheets.	$26 70
IX 20x28, 40-lb. 112 sheets.	29 70
IC 20x28, 25-lb. 112 sheets.	22 20
IX 20x28, 25-lb. 112 sheets.	25 20
IC 20x28, 20-lb. 112 sheets.	20 25
IV 20x28, 20-lb. 112 sheets.	23 00

"ARMCO" INGOT IRON PLATES

No. 8 ga.—100 lbs. $4 15
3/16 in.—100 lbs. 4 05
¼ in.—100 lbs. 3 85

COKE PLATES

Cokes, 80 lbs., base, 20x28. $12 00
Cokes, 90 lbs., base, 20x28. 12 20
Cokes, 100 lbs., base, 20x28. 12 40
Cokes, 107 lbs., base, IC 20x28 ..... 12 75
Cokes, 135 lbs., base, IX 20x28 ..... 14 75
Cokes, 155 lbs., base, 2X 56 sheets 8 50
Cokes, 175 lbs., base 3X, 56 sheets 9 35
Cokes, 195 lbs., base 4X, 56 sheets 10 25

BLUE ANNEALED SHEETS

Base 10 ga. ..... per 100 lbs. $3 35
"Armco" 10 ga. per 100 lbs. 4 15

ONE PASS COLD ROLLED BLACK

No. 18-20 ..... per 100 lbs. $3 85
No. 22 ..... per 100 lbs. 4 00
No. 24 ..... per 100 lbs. 4 05
No. 26 ..... per 100 lbs. 4 15
No. 27 ..... per 100 lbs. 4 20
No. 28 ..... per 100 lbs. 4 30
No. 29 ..... per 100 lbs. 4 45
No. 30 ..... per 100 lbs. 4 55

"ARMCO" GALVANIZED

"Armco" 24 ..... per 100 lbs. $6 10

GALVANIZED

No. 16 ..... per 100 lbs. $4 40
No. 18 ..... per 100 lbs. 4 55
No. 20 ..... per 100 lbs. 4 70
No. 22 ..... per 100 lbs. 4 75
No. 24 ..... per 100 lbs. 4 90
No. 26 ..... per 100 lbs. 5 15
No. 27 ..... per 100 lbs. 5 25
No. 28 ..... per 100 lbs. 5 40
No. 30 ..... per 100 lbs. 5 80

BAR SOLDER

Warranted 50-50 per 100 lbs. $28 00
48-52 ..... per 100 lbs. 27 00
45-55 ..... per 100 lbs. 24 50
Plumbers' ..... per 100 lbs. 23 00

ZINC

In Slabs $7 35

SHEET ZINC

Cask Lots (600 lbs.) $12 00
Sheet Lots 14 00

BRASS

Sheets, Chicago base 24¼c
Mill base 23⅛c
Tubing, brazed, Chicago base 31⅞c
Mill base 30⅞c
Tubing, seamless, Chicago base 29¼c
Mill base 28¼c
Wire, Chicago base 24¾c
Mill base 23¾c
Rods, Chicago base 22¼c
Mill base 21¼c

COPPER

Sheets, Chicago base 27⅝c
Mill base 26⅝c
Tubing, seamless, Chicago base 30¼c
Mill base 29¼c
Wire, plain rd., 8 B. & S. Go. and heavier 25⅞c

LEAD

American Pig $7 00
Bar 8 00

TIN

Bar Tin ..... per 100 lbs. $46 00
Pig Tin ..... per 100 lbs. 45 00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ASBESTOS

Paper up to 1/16 ..... 6c per lb.
Roll board ..... 7½c per lb.
Mill board 3/32 to ⅛ .. 7½c per lb.
Corrugated paper (250 sq. ft. to roll) .... $6 00 per roll

ASBESTOS SEGMENTS

8 in. ..... per 100 sets $7 30
9 in. ..... per 100 sets 8 30
10 in. ..... per 100 sets 9 30
12 in. ..... per 100 sets 10 50

BRUSHES

Furnace Pipe Cleaning
Bristle with handle, each $0 75
Flue Cleaning
Steel only, each 1 25

CEMENT, FURNACE

American Seal, 5-lb. cans, net $ 40
American Seal, 10-lb. cans, net 80
American Seal, 25-lb. cans, net 2 00
Pecora ..... per 100 lbs. 7 50

CHIMNEY TOPS

Adams' Revolving

	Wt. Doz.	Price Doz.
4 in.	21 lbs.	$11 00
6 in.	24 lbs.	11 50
7 in.	30 lbs.	13 50
8 in.	33 lbs.	15 00
9 in.	51 lbs.	16 50
10 in.	56 lbs.	18 00
12 in.	66 lbs.	22 00
14 in.	110 lbs.	36 00

CLINKER TONGS

Each $1 50

CLIPS

Damper
No-Rivet Steel, with tail pieces, per gross $9 50
Rivet Steel, with tail pieces, per cross 7 50
Tail pieces, per gross 2 40

COPPERS—Soldering Pointed Roofing

3 lb. and heavier ..... per lb. 40c
2½ lb. ..... per lb. 45c
2 lb. ..... per lb. 48c
1½ lb. ..... per lb. 55c
1 lb. ..... per lb. 60c

CORNICE BRAKES

Chicago Steel Bending
Nos. 1 to 6B ..... Net

CUT-OFFS

Gal., plain, round or cor. rd.
26 gauge 30%
28 gauge 35%

DAMPERS

Yankee Hot Air
7 inch, doz. $1 60
8 inch, doz. 2 20
9 inch, doz. 2 60
10 inch, doz. 2 80
12 inch, doz. 3 50
14 inch, doz. 5 00

ADAMS No. 1 CHECK

Check and Collar Complete
8 inch, each 2 00
9 inch, each 2 25
End Check Only
8 inch, each 1 60
9 inch, each 1 85
Collar Only
8 inch, each 50
9 inch, each 65

No. 2 CHECK

8 inch, each 1 00
9 inch, each 1 00
10% Disc. on Adams No. 1 and No. 2 Check

Diamond Smoke Pipe
7 inch, doz. $2 00
8 inch, doz. 3 20
9 inch, doz. 4 80
10 inch, doz. 9 00
Adams' Sheet Metal
7 inch, doz. $1 60
8 inch, doz. 2 20
9 inch, doz. 2 60
10 inch, doz. 2 80
12 inch, doz. 3 50
14 inch, doz. 5 00

EAVES TROUGH

Galv. Crimpedge, crated .. 75-10%
Zinc, "Barnes" 60%

ELBOWS

Conductor Pipe
Galv. plain or corrugated, round flat Crimp,
28 gauge 60%
26 gauge 45%
24 gauge 15%

Galv. Terne Steel
Plain Rd. and Rd. Corr.
28 gauge 60%
26 gauge 45%
24 gauge 15%

Square Corrugated
28 gauge 50%
26 gauge 35%

Portico Elbows
Standard Gauge Conductor Pipe, plain or corrugated.
Not nested ..... 70 & 5%
Nested solid ..... 70 & 5%
Sq. Corr., A. & B. & Octagon
28 gauge 50%
26 gauge 35%

Portico
1, 1¼, 1½ inch 45%
Copper
16 oz., all designs 40%
Zinc
All styles 60%

ELBOWS—Stove Pipe

1-piece Corrugated. Uniform Blue "Milcor" No. 28 Gauge. Doz.
5 inch $1 15
6 inch 1 25
7 inch 1 75

Special Corrugated
6 inch $1 00
7 inch 1 60

Adjustable—Uniform Blue
"Milcor" No. 28 Gauge. Uniform Blue.
5 inch $1 60
6 inch 1 75
7 inch 2 10
WOOD FACES—60% off list.

FENCE

726-6-12½% (100 rods) $28 68
1948-6-14½% (100 rods) 43 62

FILES AND RASPS

Heller's (American) 50-10%
American 60-10%
Arcade 50%
Black Diamond 50%
Eagle 50%
Great Western 50%
Kearney & Foot 50%
McClellan 50%
Nicholson 50%
Simonds 50%

FIRE POTS

Geo. W. Diener Mfg. Co.	Each
No. 02 Gasoline Torch, 1 qt.	$5 13
No. 9250, Kerosene, or Gasoline Torch, 1 qt. ...	6 50
No. 10 Tinner's Furn. Square tank, 1 gal.	11 20
No. 15 Tinner's Furn. Round tank, 1 gal.	10 70
No. 21 Gas Soldering Furnace	8 00
No. 110 Automatic Gas Soldering Furnace	10 50

GLASS

Single Strength, A, all brackets 85%
Single Strength, B, all brackets 87%
Double Strength, A, all brackets 85%
Double Strength, B, all brackets 87%

HANGERS

Conductor Pipe
Milcor Perfection Wire 25%
Milcor Triplex Wire 10%

Eaves Trough
Milcor Steel (galv. after forming) from List 50%
Milcor Selflock E. T. Wire, List 10%

HOOKS

Conductor
"Direct Drive" Wrought Iron for wood or brick .. 15%

HUMIDIFIER

"Front-Rank," Automatic
In single lots 50%
In lots of 10 or more 50-5%
In lots of 25 or more 50-10%
Vapor pans, etc., each 50%

LIFTERS

Stove Cover
Coppered ..... per gro. $6 00
Alaska ..... per gro. 4 75

MALLETS

Tinners
Hickory ..... per doz. $2 20

MITRES

Galvanized steel mitres
28 gauge 70
26 gauge 60-20

NAILS

Cut Steel, base $4 00
Wire
Common Wire, L. C. L. ... 2 95
Cement Coated 2 95

(Continued on page 52)

HYRO METAL PUNCHES

No. O. X.

The Most Powerful Punch of Its Size on the Market

Patented
Dec. 9, 1919—No. 1,324,621
June 6, 1922—No. 1,418,474

Here are a few of the many features of the famous No. O. X.:(1) Measures only 8" overall and weighs but 2⅝ lbs. (2) Can be easily operated with one hand, allowing the other hand to be used for guiding the work. (3) Powerful; punches ¼" hole in 14 gauge or equivalent with ease. (4) Front pointer and side gauge combination, an exclusive feature of the O. X., enables you to punch holes exactly where you want them, many times eliminating center punching.

The No. O. X. Punch is furnished as shown above complete with three sets of punches and dies, one each of the following sizes: ⅛", 3/16", and ¼". Stock sizes of punches and dies for the No. O. X. are 3/32", ⅛", 5/32", 3/16", 7/32", ¼" and 17/64". Intermediate sizes of round punches and dies can be made to order.

No. X. X.

The Only Combination Bench and Hand Punch

The No. X. X. Punch is the only combination bench and hand punch on the market. This unique feature allows the work to be carried to the punch or the punch to the work, as required. A pull of the pin releases the punch from the bench stand.

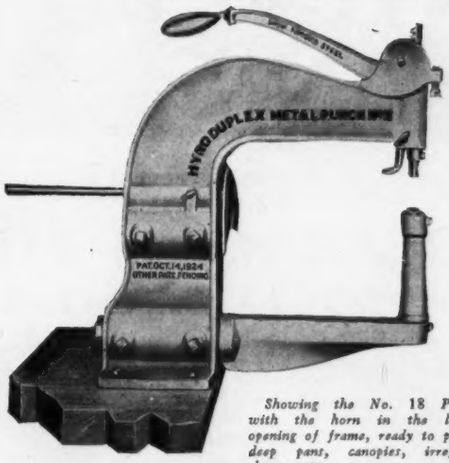
This punch has an unusual deep throat opening of 3½" deep by 2⅛" high, allowing the punching of channels, irregular shapes and forms.

Patented April 4, 1922,
No. 1,411,809

The No. X. X. Punch measures 9" overall and weighs but 4½ lbs. It has a capacity of ¼" hole in 14 gauge, ⅜" hole in 16 gauge, or 17/32" hole in 18 gauge.

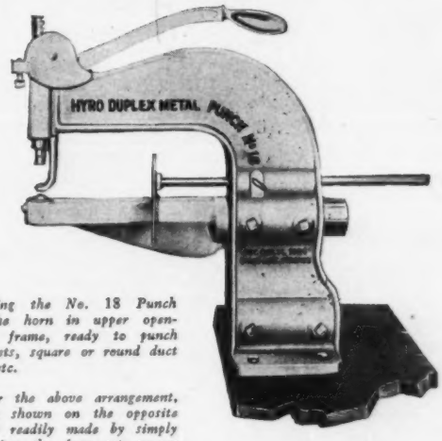
No. 18 DUPLEX

An Ideal Tool for Punching Holes in Special Shapes



Showing the No. 18 Punch with the horn in the lower opening of frame, ready to punch deep pans, canopies, irregular shapes, etc.

Patented
October 20, 1925
No. 1,558,289



Showing the No. 18 Punch with the horn in upper opening of frame, ready to punch flat sheets, square or round duct work, etc.

Either the above arrangement, or that shown on the opposite side, is readily made by simply unscrewing the four set screws on the side of the frame.

The No. 18 Hyro Duplex Metal Punch, because of its exceptionally deep throat—10" deep by 6" high—will punch holes up to 1-1/16" round in practically every conceivable shape of light gauge metal.

This punch is furnished with a sliding back gauge which can be adjusted to any depth, enabling the operator to punch holes in the same location without "fishing" for the hole.

The Hyro No. 18 Duplex Metal Punch is furnished with one round punch and die, automatic stripper, extension (for use when horn is in lower opening of frame) and adjustable gauge.

We recommend the No. 18 Punch for jobs requiring a ⅜" hole in 16 gauge steel, a ⅝" hole in 20 gauge steel, or a 1" hole in 22 gauge steel, and other sizes of holes in proportionate gauges of metal.

HYRO Shur-Grip SOLDER IRON HANDLE

Patented April 24, 1923—No. 1,453,082

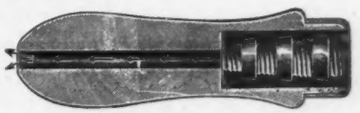
Cuts a thread on the stem of the solder iron as it is being screwed on. Once on, it stays on. Can't split. Can't get loose or come off unless it is unscrewed.

Safe and comfortable to use. Won't burn.

Pays for itself over and over again in the time it saves.

Used in thousands of sheet metal shops.

Made in three sizes for 1½ to 12 lb. Solder Irons.



Showing inside construction of the Shur-Grip Solder Iron Handle. The heat escapes through the hole in the direction indicated by arrows.

Hyro Manufacturing Co., Inc., 202 Varick St., New York

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PASTE

Asbestos Dry Paste

200-lb. barrel $15 00
100-lb. barrel 7 75
50-lb. pail 4 50
25-lb. pail 2 50
10-lb. bag 1 20
5-lb. bag 60

POKERS, FURNACE

Each $0 75

POKERS, STOVE

Nickel Plated, coil handles, per doz. $1 10
W'r't Steel, str't or bent, per doz. 0 75

PIPE

Conductor

Cor. Rd., Plain Rd., or Sq.

Galvanized

Crated and nested (all gauges) 75-7½%
Crated and not nested (all gauges) 75-2½%

Furnace Pipe

Double Wall Pipe and Fittings 50 & 10%
Single Wall Pipe, Round Galvanized Pipe 50 & 10%
Galvanized and Tin Fittings 50 & 10%

Lead

Per 100 lbs. $12 50

Stove Pipe

"Milcor" "Titelock" Uniform Blue Stove
28 gauge, 5 inch U. C. nested $11 00
28 gauge, 6 inch U. C. nested 12 00
28 gauge, 7 inch U. C. nested 14 00
30 gauge, 5 inch U. C. nested 10 25
30 gauge, 6 inch U. C. nested 11 00
30 gauge, 7 inch U. C. nested 13 00

T-Joint Made up

6 inch, 28 ga. per doz. $3 40

All Zinc

No. 11, all styles 60%

PULLEYS

Furnace Tackle per doz. $0 85
per gro. 8 50
Furnace Screw (enameled) per doz. 75

PUTTY

Commercial Putty, 100-lb. Kits $3 15

QUADRANTS

Malleable Iron Damper 10%

REDUCERS—Oval Stove Pipe

Per Doz.

7—6, 28-gauge, 1 doz. in carton $2 00

REGISTERS AND FACES

Floor Registers

Except Cast Iron 40&10%
Cast Iron 20%

Baseboard

2-Piece 40&10%
1-Piece 40-10&20%
Adjustable Cold Air Faces 40&10%
Adjustable Ventilators 40&10%

RIDGE ROLL

Galv. Plain Ridge Roll, b'dld 75-15-5%
Galv., Plain Ridge Roll, crated 75-15%

SCREWS

Sheet Metal

7, ½x⅛, per gross $0 52
No. 10, ¾x3/16, per gross 68
No. 14, ⅞x¼, per gross 83

SHEARS, TINNERS' & MACHINISTS'

Viking $22 00

Lennox Throatless

No. 18 35%
Shear blades 10%
(f. o. b. Marshalltown, Iowa)

SHIELDS, ADJUSTABLE RADIATOR

No. 1 "Gem" 11 to 17 inch 30%
No. 2 "Gem" 14 to 24 inch 30%
No. 3 "Gem" 35 to 65 inch 30%

SHOES

Galv. 28 Gauge, Plain or Corrugated, round flat crimp 60%
26 gauge, round flat crimp 45%
24 gauge, round flat crimp 15%

SNIPS, TINNERS'

Clover Leaf 40 & 10%
National 40 & 10%
Star 50%
Milcor Net

SQUARES

Steel and Iron Net
(Add for bluing $3 per doz. net)
Mitre Net
Try Net
Try and Bevel Net
Try and Mitre Net
Fox's per doz $6 00
Winterbottom's 10%

STOPPERS, FLUE

Common per doz. $1 10
Gem, No. 1 per doz. 1 10
Gem, flat, No. 3 per doz. 1 00

VENTILATORS

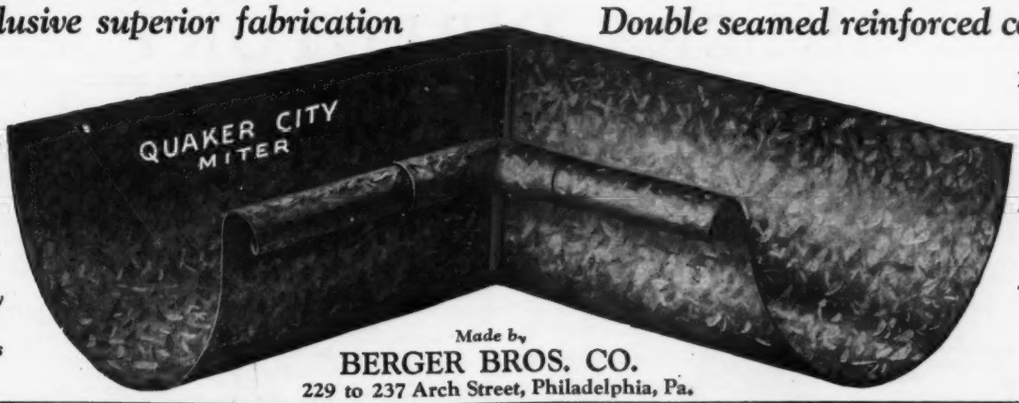
Standard 30 to 40%

WIRE

Black annealed wire, No. 9, per 100 lbs. $3 30
Galvanized barb wire, per 100 lbs. 3 00
Cattle Wire—galvanized catch weight spool, per 100 lbs. 3 85
Galvanized Plain Wire, No. 9, per 100 lbs. 3 75

Exclusive superior fabrication *Double seamed reinforced corner*

TRADE BB MARK



Made in Galvanized Steel

ARMCO IRON

TONCAN METAL AND COPPER

Sold by all Jobbers

Made by
BERGER BROS. CO.
229 to 237 Arch Street, Philadelphia, Pa.

Ready to Use

Needs only Heat

QUICK!

One operation—no separate fluxes, acids or pastes—the flux is right in the core. Quick and efficient—saves time and money on many phases of sheet metal construction, installation and repairs. Employ Kester Acid-Core in your shop; simplify your work and make it more profitable to you.

From all jobbers.

KESTER SOLDER CO., 4201 Wrightwood Ave., Chicago, Ill.
Established 1899—Formerly Chicago Solder Co.

KESTER FLUX-CORE SOLDER
ACID-CORE ROSIN-CORE PASTE-CORE
METAL MENDER RADIO SOLDER

PERFORATED METALS

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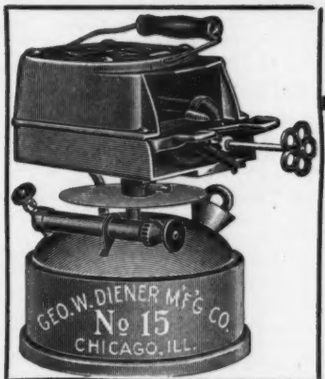

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Mueller Furnace Co., Milwaukee, Wis.
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A. H. Robinson Co., Massillon, Ohio

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American Furnace Co., St. Louis, Mo.
Brillion Furnace Co., Brillion, Wis.
Calkins & Pearce, Columbus, Ohio
Dowagiac Steel Furnace Co., Dowagiac, Mich.
Emrich Co., C., Columbus, Ohio
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Alamo Heater Co., Chicago, Ill.
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Meyer Furnace Co., The, Peoria, Ill.
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Bertsch & Co., Cambridge City, Ind.
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Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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Berger Bros. Co., Philadelphia, Pa.
Eller Mfg. Co., Canton, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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(Continued on page 56)

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Vedder Pattern Works, Troy, N. Y.

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Osborn Co., The J. M. & L. A., Cleveland Ohio

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New Jersey Zinc Sales Co., The, New York, N. Y.

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Pipe Covering.
Sall Mountain Co., Chicago, Ill.

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La Salle Machine Works, Chicago, Ill.
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Punches—Hand.
Hyro Mfg. Co., New York, N. Y.

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Register Shields.
Beh & Co., Inc., New York, N. Y.

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Forest City-Walworth Run Foundries Co., Cleveland, Ohio
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Register & Mfg. Co., Cleveland, Ohio
Ku-No Register Mfg. Co., St. Louis, Mo.
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Meyer & Bro. Co., F., Peoria, Ill.
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Mueller Furnace Co., L. J., Milwaukee, Wis.
Rock Island Register Co., Rock Island, Ill.
Symonds Register Co., St. Louis, Mo.
Tuttle & Bailey Mfg. Co., Chicago, Ill.
Waterloo Register Co., Waterloo, Ia.

Registers—Wood.
American Wood Register Co., Plymouth, Ind.
Auer Register Co., Cleveland, Ohio
Eller Mfg. Co., Canton Ohio
Marsh Lumber Co., Dover Ohio
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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Eller Mfg. Co. Canton, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

Rivets—Stove.
The Kirk-Latty Co., Cleveland, Ohio
Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Rods—Stove.
The Kirk-Latty Co., Cleveland, Ohio
Lamson & Sessions Co., Cleveland, Ohio

Rolls—Forming.
Bertsch & Co., Cambridge City, Ind.

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Connors Paint Mfg. Co., Wm., Troy, N. Y.

Roof—Flashing.
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Milwaukee Corrugating Co., Milwaukee, Wis.

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Central Alloy Steel Corp., Massillon, Ohio
Eller Mfg. Co., Canton, Ohio
Inland Steel Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Sons, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Roofing—Tin.
Eller Mfg. Co., Canton, Ohio
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Taylor Co., N. & G., Philadelphia, Pa.

Roofing—Zinc.
New Jersey Zinc Sales Co., The, New York, N. Y.

Rubbish Burners.
Hart & Cooley Co., New Britain, Conn.

Schools—Sheet Metal Pattern Drafting.
St. Louis Technical Institute, St. Louis, Mo.

Schools—Warm Air Heating.
St. Louis Technical Institute, St. Louis, Mo.

Screws—Hardened Metallic Drive.
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Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Parker-Kalon Corp., 200 Varick St., New York

Screws—Hardened Self-Tapping, Sheet Metal.
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Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Parker-Kalon Corp., 200 Varick St., New York

Screens—Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Shears—Hand and Power.
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Marshalltown Mfg. Co., Marshalltown, Ia.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.

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Deniston Co., Not Inc., Chicago, Ill.

Sheet Metal Screws—Hardened, Self-Tapping.
Parker-Kalon Corp., 200 Varick St., New York

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Central Alloy Steel Co., Massillon, Ohio
International Nickel Co., New York, N. Y.

Sheets—Black and Galvanized.
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Central Alloy Steel Corp., Massillon, Ohio
Eller Mfg. Co., Canton, Ohio
Inland Steel Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Rockford Sheet Steel Co., Rockford, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Taylor Co., N. & G., Philadelphia, Pa.

Sheets—Iron.
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Central Alloy Steel Corp., Massillon, Ohio
Eller Mfg. Co., Canton, Ohio
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Sheets—Tin.
Taylor Co., N. & G., Philadelphia, Pa.

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Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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Eller Mfg. Co., Canton, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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Snips.
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Solder—Acid Core.
Kester Solder Co., Chicago, Ill.

Solder—Self-Fluxing.
Kester Solder Co., Chicago, Ill.

Solder—Rosin Core
Kester Solder Co., Chicago, Ill.

Solder.
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Kester Solder Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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Revere Copper & Brass, Rome, N. Y.

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Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

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Fanner Mfg. Co., Cleveland, Ohio

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Gerock Bros. Mfg. Co., St. Louis, Mo.
Miller & Doing, Inc., Brooklyn, N. Y.

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Eller Mfg. Co., Canton, Ohio
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

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Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Maplewood Machinery Co., Chicago, Ill.
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Rockford Sheet Steel Co., Rockford, Ill.
Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.

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Burgess Soldering Furnace Co., Columbus, Ohio
Bruno Martin, Saginaw, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Trade Extension.
Sheet Steel Trade Extension Committee, Cleveland, Ohio

Trimmings—Stove.
Fanner Mfg. Co., Cleveland, Ohio

Vacuum Cleaner—Furnace.
Brillion Furnace Co., Brillion, Wis.
National Super Service Co., Toledo, Ohio
Williamson Heater Co., Cincinnati, Ohio

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Arex Company, Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Eller Mfg. Co., Canton, Ohio
Kernchen Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City
Royal Ventilator Co., Philadelphia, Pa.
Standard Ventilator Co., Lewisburg, Pa.

Ventilators—Ceiling.
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio

Windows—Steel.
Lupton's Sons Co., David, Philadelphia, Pa.

Wood Faces—Warm Air.
Auer Register Co., Cleveland, Ohio
American Wood Register Co., Plymouth, Ind.
Eller Mfg. Co., Canton, Ohio
Milwaukee Corrugating Co., Mil., Chgo., La Crosse, Kan. City

Zinc.
New Jersey Zinc Co., The, New York, N. Y.

WANTS AND SALES

Yearly subscribers to the AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE for three insertions.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired and must reach our office ten days prior to date of publication. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines—employment agencies and brokers.

When sending advertisement state whether your name or blind number is to be used.

BUSINESS CHANCES

Lightning Rods—Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddie Company, Marshfield, Wis.

Wanted—Would like to get in touch with a practical man in the fender and body business; I am considering putting in a first class shop of this kind in a live town of 60,000. Must be capable of estimating and have a practical working knowledge of this business. Married man preferred and references required. Address K-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—A well equipped sheet metal and furnace business on account of old age in best city in southern Illinois. If interested write to Mount Vernon Sheet Metal Works, Mt. Vernon, Ill. M-514

For Sale—Well located power sheet metal shop in Portland, Ore. General sheet metal, blow pipe and furnace business. Building leased at $40 month. About $4,000 needed. Terms to responsible party. The right man can make money here. Address O-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale or Rent—Well equipped tinshop in country town. Good location, large territory, plenty of work, good prices and most all cash. I will give good terms to a reliable man. If you are tired of working for the other fellow, it will pay you to address a letter to The Orland Tin Shop, Orland, Ind. F-513

SITUATION WANTED

Jobber Connection—Communication welcomed from reputable furnace manufacturer desirous of operating a distributing point in a large Wisconsin city on a consignment arrangement and handle all accounts. For such connection offer adequate warehouse facilities. A wide acquaintance through the furnace trade with years of experience. Replies held in strict confidence. Address B-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Wanted—Medium priced line of gas ranges and bungalow stoves for Chicago and suburban territory on commission basis. Address Y-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

SITUATION WANTED

Young, aggressive executive, thoroughly versed in stove and furnace business, seeks position for 1930. Capable of handling branch or any executive duties. Address A-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation wanted by tinner and furnace installer; A-1 references; central Illinois preferred. Address S-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation wanted by all around sheet metal worker and furnace man; health and habits o. k.; can take charge if required and produce. Address T-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Warm air furnace salesman, 35 years of age, with best of references, wishes position with manufacturer or first class jobber; 12 years' experience in sales work, 8 years in one factory; handles any detail; experienced in forced warm air heating and code estimating; successful sales record; go anywhere; what have you to offer? Address W-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation wanted by A-1 combination tinner, plumber and heating man. Thoroughly experienced as clerk in hardware store; married and active; capable of taking charge of shop if desired; best of references and can come at once at reasonable wages; only steady position considered. Address X-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago. Ill.

Furnace Salesman—A reliable furnace heating man and salesman wants to communicate with furnace manufacturer (cast or steel) reference to position and territory for 1930. Address Z-512, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation wanted by good combination man, tinning, plumbing and heating; now employed, wants change; south preferred; state wages and hours. Address Z-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation wanted by A-1 sheet metal worker of 25 years' experience on light and heavy sheet metal work; have experience on restaurant equipment, cornice and pipe work and general sheet metal work that comes to jobbing shop; would like to hear from reliable concern where they work 8 or 9 hours per day; state particulars in first letter. Address A-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

A competent plumber, furnace man and tinner wants position about February 1 or later; strictly sober and reliable and able to take charge of work. Address, stating wages, B-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—Young man, age 28, with 10 years' experience in job work, furnace, cornice, pipe work, slate and tile roofing; pattern cutting a specialty; married and will go anywhere for right kind of job. Address C-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Man with 20 years' experience in manufacture and sales of warm air furnaces and familiar with all types warm air, hot water and steam heat, desires connection; prefer traveling—no choice of territory; 42 years of age. Address D-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Position Wanted — A first-class sheet metal worker who can cut patterns and handle anything in the business will be at liberty about January 1. Wants steady job. Will go anywhere. State wages and working conditions. Address T-512, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

MISCELLANEOUS

Would like to know the whereabouts of Louis B. Berg who at one time was employed by the Homer Furnace Company and the Rudy Furnace Company. Mr. Berg, we understand, has lived in Topeka, Kansas. Address P-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Oil burner in A1 condition. Address Wm. J. Rannigan, 7119 Michigan Ave., Swissvale, Pa. G-513

HELP WANTED

Wanted—All around handy man with at least two years of experience to work in country shop where we do plumbing, tinning and heating. Steady work. Must furnish references. Address C-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Wanted at Once—First-class tinner and furnace man. Steady job for right party. $40 per week. 8-hour day. Address J. H. Barnett, Dodge City, Iowa. W-512

Wanted—A-1 salesman to call on jobbers and manufacturers in the warm air heating industry; attractive commission arrangement; handle as side line. Address E-514, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Master Plumber—Combination in hot water, steam, vapor and warm air to act as working foreman; must have unusual amount of experience in all of above lines along modern heating and plumbing practices. Steady work. Investment if desired. Write A. C. Butters, 439 Eastwood Pl., Milwaukee, Wis. F-514

BOOKS

The Standard Code Computing Rule, which is adapted from Article III of the 5th Edition of the Standard Code, is being used by warm air heating men all over the country. Here is what the Computing Rule will determine: (1) The warm air pipe and register areas for first, second and third floor rooms. (2) The areas necessary for 70° inside temperature when the outside temperatures are zero, 10, 20 and 30 degrees above or below zero. (3) The areas from the contents, glass, wall, roof and ceiling. The factors as covered in Table "A" are represented in accurate form. (4) The areas for rooms having one, one and one-half and two air changes per hour. (5) The unusual exposure requirements as the 10% for east and west and 15% for northeast, north and northwest rooms. Rule is circular, measuring 5½ inches in diameter and ⅛ inch thick, being made of specially prepared celluloid. Washable and unbreakable.

Price, $3.00, postpaid, from Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Here are the two books that most sheet metal workers and contractors classify as the most complete books on Sheet Metal Pattern Cutting. The Universal Sheet Metal Pattern Cutter, Vol. 1, deals with every phase of inside work, including Heating, Ventilating, Blower and Exhaust Piping Connections, Marine Sheet Metal Work, Automobile Sheet Metal Work, Machinery and Belt Guards, etc. Mensuration applied to Sheet Metal Work, etc., with many features of construction and Labor Saving Methods are also given in detail.

Vol. 2 deals with every form of Outside and Architectural Sheet Metal Work. A treatise on Drawing, Full Size Detailing and Lettering, Construction of Cornices, Skylights, Molding, Copings, Electrically Illuminated Signs, etc.

Cloth bound, 400 pages each volume. Price, $7.50 per volume, postpaid. Order from Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

The Revised Edition of the New Metal Worker Pattern Book by Kittredge and Associates is one book that should be in every shop. As a reference book alone it is indispensible. Over 500 9x11-inch pages with 895 illustrations. It covers the principles underlying practically every problem that is likely to come up in daily practice. Beginning with the selection and use of drawing tools, the author explains linear and geometrical drawing so clearly that one who has had no previous knowledge of arithmetic or drawing may understand these essentials and apply them. The most approved methods of pattern cutting are also given in the course of the work. Price, $6.00, postpaid. Order from the Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

TINNERS' TOOLS

Wanted—8-foot brake in good condition. Cash for right price. Address Schwarzkopf Sheet Metal Works, Waupaca, Wis. X-512

For sale or trade on other sheet metal tools: 1 No. 2 Simplex combined shears and punch, like new. Need bar folder, groover, beading machine or other tools. Kersten's Tin Shop, 1511 N. 8th St., Sheboygan, Wis. Y-512

We are in the market for the following used machinery: Power or hand ROTARY CUTTING SHEARS for No. 10 gauge, four or five foot, BOX or PAN BRAKE for No. 12 gauge, medium size bench or stand POWER PRESS. Address Dean Specialty Works, San Antonio, Texas. E-513

For Sale—One Chicago Elbow Machine complete with jigs, also a quantity of IC and IX tinplate, rolled to size. Address D-513, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Complete set of tinsmith's tools in A-1 shape at a bargain for cash. For full particulars write E. A. Goehring, 1336 Retallack St., Regina, Sask., Canada. G-514

For Sale—1 No. 41 Beaver die, cuts 2½ to 4 inches; 1 No. 4 Barnes 3 wheel pipe cutter; 1 4-inch piper vise; 1 36-inch pipe wrench. These tools are all brand new and will sacrifice for $55. Address Chas. Y. Nellis, 705 S. Franklin St., Robinson, Ill. H-514

Wanted—Used burring machine; state condition, make and price; must be in good condition and priced right. Address F. D. Savage, New Market, Ia. L-514

For Sale—1,000 ft. giant 32 wire fine copper lightning rod cable; 16 complete tops—4 high and 8 bungalow; 16 glass balls—8 white, 8 blue; 2 plain aluminum arrow vanes; 2 23-inch horse vanes; 2 23-inch cow vanes. All brand new. Cost $115—$80 cash takes it. Address J-514, AMERICAN ARTISAN, 39 N. Clark St., Chicago, Ill.

BOOKS

Exhaust and Blow Piping, by Hayes—Exhaust and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches giving all necessary guidance in fan work blower and separator construction. 159 pages, 6x8. 51 figures Cloth, $2.00. Order from Book Dept. AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

SPECIAL NOTICES

The Rate for Special Notices — displayed want ads — $3.00 per inch per insertion
When sending copy state whether your name or blind number is to be used—also how many insertions are desired.

PATENTS

HUBERT E. PECK
Patent Attorney
Barrister Bldg., WASHINGTON, D. C.

WANTED

Experienced Furnace Salesmen for various states with old established line. References required. Address P. O. Box 313, Belleville, Illinois. L513

WANTED

A Salesman to buy a paying Furnace Business. No tinners' tools. Stock consists of furnaces and sundries. Two men in 1928 handled 150 new home job installations. Address M513, American Artisan, 139 N. Clark St., Chicago, Ill.

WANTED

Canadian Warm Air Furnace Manufacturer with good trade connection and live wire sales force, wants to secure exclusive Agency for a good side line, that can be marketed to the Tinsmithing, Plumbing and Hardware trade. What have you to offer? Address O513, American Artisan, 139 N. Clark St., Chicago, Ill.

CITY GAS SERVICE

A steel bottled fuel, using regular type of city gas stove. Ever sure repeater for fuel gas. Wonderful profit producer. Dandy proposition for city or resort business. Trade or sell reasonable. Write Butters-Fetting Company, 461 11th Ave., Milwaukee, Wis. R513

SPECIAL NOTICE

SPECIAL NOTICE

This classified ad is directed to manufacturers only by a woman secretary who desires to make a change. During past two years have acted in secretarial capacity for a man well known and respected in this industry. His retiring at the present time from the organization makes it necessary that I obtain a new connection. Am capable to handle details for manufacturer from both retail and wholesale angles. References backed by several years' experience. At present located in Columbus. Willing to make change. Address P514, American Artisan, 139 N. Clark St., Chicago, Ill.

AM DESIROUS OF

obtaining two or three small accounts, novelties preferred, to introduce to the retail hardware trade of southern California. Have for many years covered this section in the interest of a large manufacturing concern and am well known to practically every hardware dealer in the territory. John S. Sanders, 1959 N. Wilton Place, Hollywood, Calif. S512

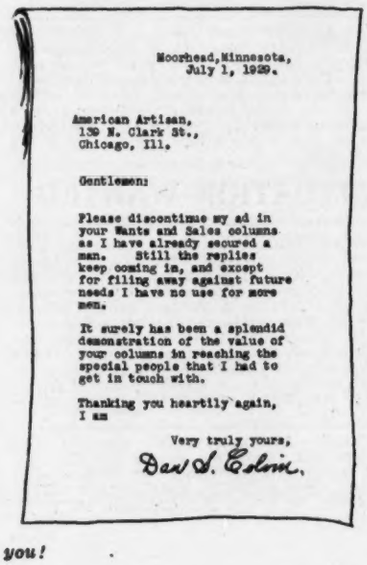
EXPERIENCED SALESMAN

between 25 and 35 years old to sell high grade line furnaces and boilers to the trade in Wisconsin territory. Address H513, American Artisan, 139 No. Clark St., Chicago, Ill.

CLEAN HOMES FOR $2.00 ! ! !

Have your furnace double sealed with INSALUTE CEMENT (liquid porcelain). Applied like paint, does not require the furnace to be re-set. Used by hundreds of furnace installers throughout the country. Place your order for an 8 lb. can at $2.00 today!

TECHNICAL PRODUCTS COMPANY
2308 Main Street Pittsburgh (15) Pa.



Moorhead, Minnesota,
July 1, 1929.

American Artisan,
139 N. Clark St.,
Chicago, Ill.

Gentlemen:

Please discontinue my ad in your Wants and Sales columns as I have already secured a man. Still the replies keep coming in, and except for filing away against future needs I have no use for more men.

It surely has been a splendid demonstration of the value of your columns in reaching the special people that I had to get in touch with.

Thanking you heartily again, I am

Very truly yours,
Dan S. Colvin.

SPEED ON THE JOB MEANS *MORE* PROFIT

Quickest—BUY MODERN MACHINERY—Cheapest

SPECIAL BARGAINS

10' 10 Ga. Geo. A. Ohl Press Brake, motor driven, $1750.00
No. 18 Bliss Punch Press $100.00

WE WANT TO BUY FOR CASH

10' 14 Ga. Power Shear
10' 10 Ga. Apron Brake
Spot Welder.

WRITE FOR BARGAIN BULLETIN

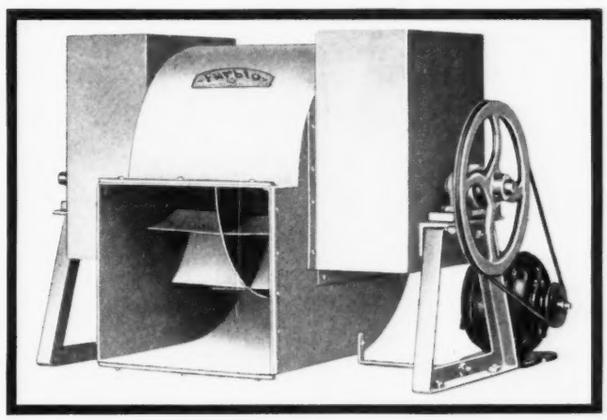
INTERSTATE MACHINERY COMPANY
601-11 West Monroe Street Chicago, Illinois

AMAZING — THIS NEW FURNACE BLOWER

—adopted exclusively by leading manufacturers

—endorsed by engineers

—simple, efficient, quiet



Not a Fan! A Blower!

Nothing to equal the new FURBLO has ever before been offered the warm air furnace manufacturer, distributor or dealer.

FURBLO makes old-fashioned methods obsolete. It is *not* a propeller fan, but a *blower*—producing a guaranteed positive circulation of heat to every room in the house. It is distinctly in a class by itself.

FURBLO has opened the eyes of the warm air furnace industry to the tremendous new field and profits that 100% efficient forced warm air heating makes possible. It will cure a sick furnace that is not doing the job right or it will guarantee the success of a new installation. To specify FURBLO is to improve the installation—increase the profit.

Furblo

The Quiet Efficient Furnace Blower

LAKESIDE COMPANY
Hermansville Michigan
Mfrs. of
Lakeside Ventilating Equipment

LAKESIDE CO., Dept. A-1,
Hermansville, Mich.

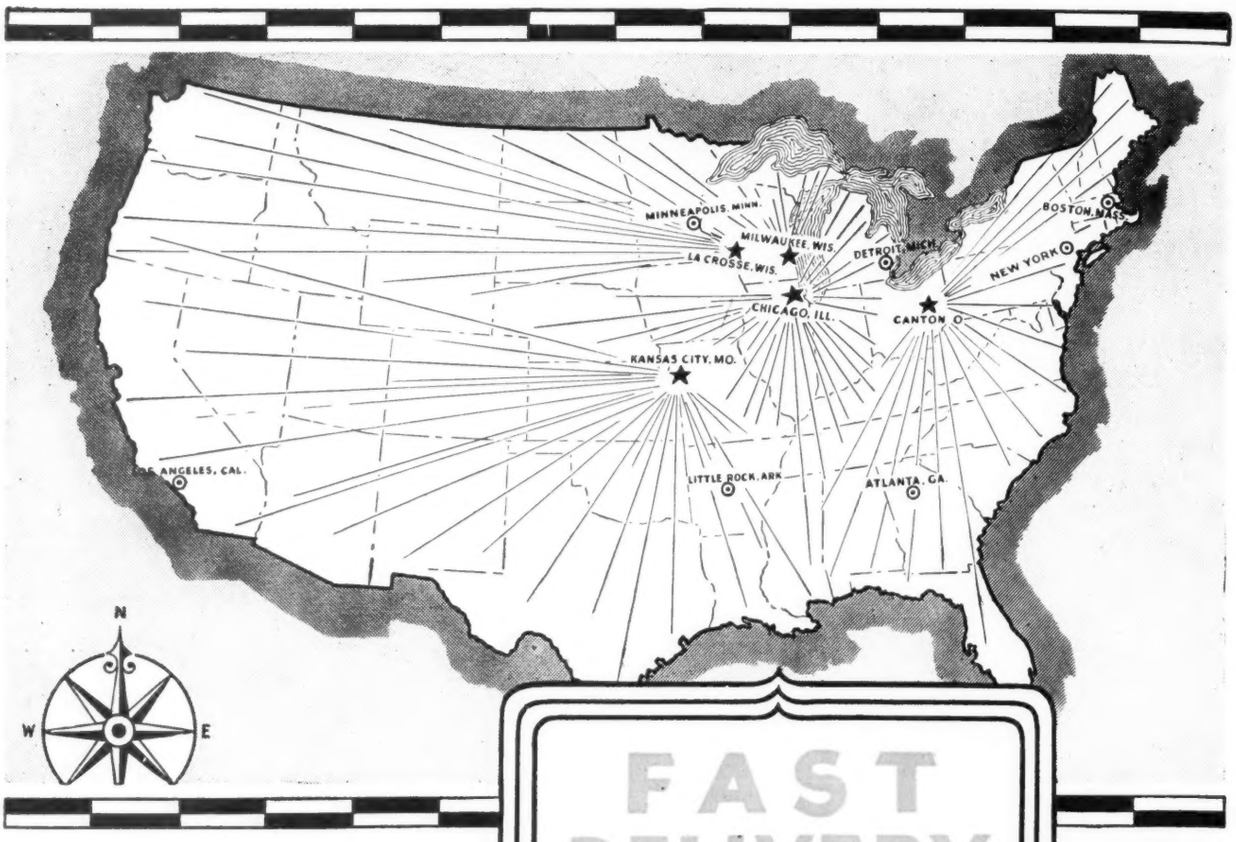
Please send complete information about FURBLO. I am a

( ) Manufacturer
( ) Furnace Jobber
( ) Distributor of sheet metal, furnace fittings and supplies.
( ) Furnace Dealer.

Name .....

Address .....

City ..... *State* .....



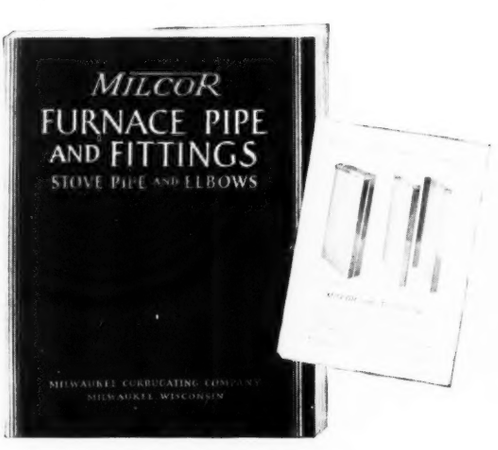
FAST DELIVERY

FROM THE NEAREST BRANCH—MILCOR

ONE of the fundamental policies of *Milcor* is that *customers shall not be kept waiting.* This creed of service is as rigid as the high standard of quality that has made the name *Milcor* a trusted and respected trademark. *Milcor* service is a highly perfected and organized method of delivery from the nearest branch. Everything possible is done to speed delivery without sacrificing accuracy. Five branches advantageously located are kept in full stock ready to serve you at all times.

This service combined with the high standard and completeness of the *Milcor* line of heating equipment . . . makes *Milcor* your outstanding source of supply. The *Milcor* Catalog is your guide. It is arranged for simplicity and quick figuring . . . Use it . . . Use *Milcor* service to make your business more profitable.

MILWAUKEE CORRUGATING COMPANY
1417 Burnham St. **Milwaukee**



Branches: Chicago, Ill., Kansas City, Mo., La Crosse, Wis. *Sales Offices:* Boston, Mass., Detroit, Mich., Atlanta, Ga., Little Rock, Ark., Minneapolis, Minn., New York, N. Y., Los Angeles, Calif.

Eastern Plant: **THE ELLER MANUFACTURING CO.,** *Canton, Ohio*

MILCOR PRODUCTS